Review
of the
Forest Administration
in the
Several Provinces under the Government of ~~Bombay~~ INDIA
for the years
1880-81 to 1885-86

00134400

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26/29/1

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BY

W. SCHLICH, PH. D.,

OFFG. INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA,

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Dated the 1st July 1882.

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INTRODUCTION.

THE present Review deals with the several provinces under the Government of India, including Berar, Biluchistan, and, in the financial chapter, Madras and Bombay. Mysore has now been made over to the Maharajah of that country, and, as no Report on Forest Administration in that State during the year 1880-81 has been received, it has been excluded from the several statements contained in the Review.

2. **Localisation of the Superior Staff.**—By a Resolution of the Government of India, dated the 1st April 1881, the Superior Forest Staff has been localised, after having been arranged in six lists, in the following manner :—

Name of List.	Conservators.	Deputy Conservators.	Assistant Conservators.	Total.
1. Bengal and Assam	2	5	8	15
2. North-Western Provinces and Oudh ...	3	6	9	18
3. Punjab	1	7	10	18
4. Central Provinces	1	6	6	13
5. British Burma	2	8	7	17
6. Residuary list (including School appointments)	1	5	6	12
Total ...	10	37	46	93

First appointment to the grade of Assistant Conservator rests with the Government of India: promotion from Assistant Conservator, 3rd grade, to Deputy Conservator, 1st grade, with the Local Government; while the appointments to the rank of Conservator of Forests are reserved to the Government of India. It will be seen that the Local Governments are quite

independent, except that the Government of India confirms first appointments to the Department and selects the head of the Department in each Province or Circle.

3. **Forest Officers connected with Civil Officers.**—The system of connecting Forest Officers closely with the Civil Administration was suggested by Mr. Brandis, the Inspector General of Forests to the Government of India, when submitting proposals for a re-organisation of the Bombay Forest Staff in 1870. The plan then adopted consists of the appointment of a "District Forest Officer" to each district or collectorate, who is in charge of all forest matters in the district, and entirely subordinate to the Collector, through whom he corresponds with the Conservator.

The next step in this direction was taken by the Chief Commissioner of the Central Provinces, who introduced, in 1877, a modified system, according to which the Conservator and his Assistants remain in independent charge of all Reserved Forests, while the District Forest Officers are subordinate to the Deputy Commissioners regarding all Unreserved Forests.

A further modification was introduced by the Government of the North-Western Provinces and Oudh in 1880, by which the District Forest Officer is made subordinate to the Collector, his correspondence being arranged in two classes; that referring to accounts, establishments and a few other subjects is sent direct to the Conservator of Forests, while that on all other subjects is submitted by the District Forest Officer to the Collector, who forwards it to the Conservator.

The same system was introduced into Assam on the 1st January 1882.

In Chittagong several changes took place. Originally the Forest Officer acted directly under the Conservator of Forests, Bengal; then he was made subordinate to the Deputy Commissioner of the Chittagong Hill Tracts, the Commissioner of the Division being at the same time gazetted as Conservator of Forests. Subsequently the original system was re-established, and finally the Forest Officer was again made subordinate to the Deputy Commissioner of the Hill Tracts, the Conservator of Forests, Bengal, remaining Conservator for the Hill Tracts.

In the Hazára and Rawalpindi Districts of the Punjab the Forest Officers have, for many years past, been nominally subordinate to the Civil District Officers.

In Madras a system similar to that adopted in Bombay has been in force for some time, and the matter has been discussed in almost every other Province.

4. Experience has shown the great advantages of the principle, and the time has now arrived when the system of connecting the Forest staff directly with the Civil staff should be generally adopted throughout India. Of the different modifications, that followed in Bombay seems to have worked best, and it is, with certain alterations, about to be introduced into the Madras Presidency. The system, as now perfected, has been described in detail in a Memorandum drawn up by Mr. Brandis, three Collectors, and the Conservator of Forests in Madras, and it may be indicated as follows:—

The District Forest Officer and the staff under him hold charge of all forests, whether reserved or otherwise, in the district, and they are directly subordinate to the Collector. The District Forest Officer receives no orders from any other authority, and he will be in the position of Assistant to the Collector in forest matters, while the Collector will give no orders on such matters, except through him. On matters of ordinary routine the Collector will authorise the District Forest Officer to issue orders without reference to him, making such arrangements as may be necessary for such orders being reported by means of weekly abstracts. Other matters will be referred to the Collector by means of office notes. The District Forest Officer, being the head of a branch of the Collector's office, will not communicate with the Collector by official letters. He will draw up in his own hand a sufficiently full report or diary of all business, and send it to the Collector at the close of each week. The Collector, after recording any remarks or instructions he may think fit, will send it on for the Conservator's information, and that officer will return it

without delay, noting any remarks or suggestions he may have to offer. It will then go back to the District Forest Officer, the Collector, if he disagrees with the Conservator's remarks or suggestions, informing the District Forest Officer, so as to guard against action being taken of which he disapproves. In such cases he will at once inform the Conservator. It will thus be seen that the Collector will have full executive power, while the functions of the Conservator in regard to the current work are mainly those of advice. On the other hand, the control of the departmental finance and organisation will rest with the Conservator.

5. As to finance, there will be an annual budget, which will be sanctioned by Government. This will be made up of district budgets; and in close connection with and, in fact, depending on these budgets, will be the annual plans of operations in each district, which will be framed by the District Forest Officer, and discussed, and probably agreed upon, by the Collector and the Conservator. If they differ as to the budgets and plans of operations, each will have his say, and it will be for Government to decide. This done, the responsibility for the execution will rest with the Collector alone. The existing powers of financial control vested in the Conservator, namely, of making transfers from district to district under "A—Working Charges" and "B—Establishments," and of sanctioning estimates for works, should remain with him; but he should not have power to transfer any allotment from a district without the Collector's assent, or the orders of Government. If during the year the Collector desires to incur expenditure which is not provided in the budget, he will have to address the Conservator, who, if he approves and can find the money, will make it available. The Conservator will be kept informed of what is going on in all districts, and will be able to watch progress; but the responsibility for the due execution of the programme, and for the conduct of all district business, will rest with the Collector, and not with the Conservator. The Collector, however, should not be at liberty to make transfers under "Working Charges" in his district without the Conservator's sanction.

6. As to the staff, the scale of establishments will be sanctioned by the Government, and the appointment, posting, and promotion of the superior officers rest with them. The appointment, posting, and promotion of Forest Rangers and Foresters should vest in the Conservator, and the appointment, posting, and promotion of Forest Guards in the Collector, who will no doubt, in practice, leave these matters to his District Forest Officer. The Collector should have the power to fine and suspend Forest subordinates, and to dismiss Forest Guards. The dismissal of Rangers and Foresters will rest with the Conservator, who appoints them, but he will naturally be guided in his action by the Collectors, who are responsible for the local working and protection of the forests. It is of supreme importance that all Forest Officers, those of the subordinate as well as of the superior staff, shall possess the requisite qualifications and training, and these would not in all cases be secured, nor could the flow of promotion necessary to efficiency in the department be maintained, under a system of local selection by Collectors. In regard to Forest Rangers and Foresters, therefore, Collectors must accept the Conservator's decisions, though no doubt that officer will, as far as he can, consult the convenience and wishes of the Collectors in the disposal of the staff.

7. Professional matters will eventually be mainly regulated by working plans prepared for each forest. Whenever circumstances are sufficiently advanced to justify the preparation of such working plans for any forest, the data will generally be collected, and the proposals framed, by a specially qualified Forest Officer, working in conjunction with the District Forest Officer and under the control of the Conservator. When completed, such working plans should be concurred in by the Collector, and if intended to regulate operations during a long series of years, they should be submitted to higher authority for sanction. No deviation from the provisions laid down in such working plans should be permitted without the Conservator's concurrence, and none should be made unless necessitated by unforeseen events.

8. But it will be a long time before the preparation of working plans for all forests can be undertaken on a large scale, and the present organisation must, therefore, be framed for the existing state of things. As already explained,

the work in each district will be regulated by annual plans of operations prepared in close connection with the budgets. Whenever working plans have been framed, these annual plans of operations must be based upon the provisions of the working plans. Where no working plans exist, and until such plans have been made, the annual plan of operations must be based on the general principles of forest conservancy. These annual plans will prescribe what work is to be done in the demarcation of boundaries, road-making and other communications, fire-protection, closing forests against grazing, cultural operations, and thinning and cutting; and they will generally indicate all work that should be done during the year in each forest range of the district. The District Forest Officer will, under the Conservator's advice, frame the plan of operations, which, as already explained, must receive the Collector's approval. The responsibility for carrying out the plan of operations will rest entirely with the Collector, but for such deviations as may be necessitated by unforeseen events the Conservator's consent must first be obtained.

9. In this manner the Conservator will exercise the needful control in professional matters, and maintain that continuity of action which is necessary. But in the present state of forest administration, it must not be expected that the annual plans of operations will be sufficient. There will be many instances in which the Conservator will find it necessary to communicate with the Collector regarding matters of a professional nature, which are not provided for in the annual plans. Hence, it is indispensable that the Conservator should be kept fully informed of all that is going on, and this will enable him at any time to communicate his opinion to the Collector; and, if the matter seems of sufficient importance, to address Government. Eventually each Collector will have at hand a professional officer of high qualifications: this will tend to diminish references by and to the Conservator, and there will then be little danger of action in a wrong direction being taken, or of the Conservator being unable to make his professional influence felt.

10. The introduction of the system here sketched must be of the utmost importance for the progress of forest conservancy in India. The Forest Department having thus become an integral part of the general administration, all jealousy about lands and revenue disappears, and, the Collector being directly interested in the administration of the forest lands, a thorough safeguard is established that the Forest Law is applied in a judicious manner, and that the requirements of the people of the district are duly considered.

11. **Organisation.**—Closely connected with the subject noted above is the organisation of the Department and of the staff. The difficulty at present in the way of a systematic organisation is the unequal distribution of the forest area. Some districts are rich and others poor in forest. For the former a separate District Forest Officer should always be appointed, and he should be put under the orders of the Collector or Deputy Commissioner, as the case may be, but it is not always easy to arrange for districts with a limited forest area. In some cases several districts may be joined into one Forest Division, the Forest Officer being either put directly under the orders of the Commissioner of the Division, or under the orders of the Collectors as regards the forests in their respective districts. The latter arrangement is of course awkward, as it necessitates the placing of the Forest Officer under several masters, and it should be avoided, whenever this can be done. In such cases it will, as a rule, be better to put the Forest Officer directly under the Commissioner's orders.

12. An important point is the formation of suitable "Ranges" or executive charges. When this has been done, we shall have the following organisation:—

(1) **Circle.**—Comprising a province or part of it, presided over by the Conservator of Forests;

(2) **Division.**—Ordinarily comprising a district, presided over by the District Forest Officer, who should be a Deputy Conservator of Forests; and

(3) **Range.**—Comprising part of a district, presided over by a Ranger, Sub-Assistant Conservator, or Assistant Conservator, according to circumstances.

The superior staff will, in future, be chiefly recruited by trained men sent out from home, who enter as Assistant Conservators of the 3rd grade, and who will take charge of Ranges, until they have qualified for the charge of a Division, and until suitable vacancies arise. The Rangers and Sub-Assistants are men appointed in this country, and they will all be Natives of India. The men selected for this branch of the service will ordinarily enter as Foresters, and after they have done one year's satisfactory service, they will be sent to the Dehra Dún Forest School. Here they remain for not less than 16 months, and, if necessary, for 28 months. On obtaining the Ranger's certificate they return to their Province to be appointed as Rangers as vacancies occur.

Rangers who distinguish themselves specially may subsequently be advanced to the rank of Sub-Assistant Conservator, and even to Assistant Conservator in exceptional cases. It is evident, without further explanation, that the success of Forest Administration in the future depends greatly on the formation of a competent staff of Rangers, or executive officers.

13. **Dehra Dun Forest School.**—For the purpose of training an efficient staff of executive officers, the Forest School at Dehra Dún has been established. It has repeatedly been referred to in previous Reviews, and it will suffice to mention that, though started in 1878, it has been permitted to grow slowly, the instruction for the first two years having been practical only. In the summer of 1881, however, the first course of theoretical instruction was held. About 30 students, arranged in two classes, attended the lectures on Forestry, Botany, Forest Law, Natural Sciences, Mathematics and Surveying. The result has been satisfactory, though much remains to be done. The school buildings have now been arranged in a suitable manner, the collections are steadily being extended, a forest garden and experimental blocks have been taken in hand, and the preparation of short hand-books to assist the students in their work is fairly advanced; but, of course the completion of all this work takes time, and it must not be expected that matters can be placed on a thoroughly satisfactory footing all at once.

The Working-Plan Branch has been connected with the Forest School, and thus the means of teaching in that branch have been augmented.

14. As the result of the experience gained during the first course of theoretical instruction, it has been decided to raise the educational requirements of the students, and to admit only men who have passed the entrance examination of an Indian University on the English side, it having been found that the students require that minimum of education to enable them to follow the lectures.

The second course of theoretical instruction commences on the 1st July 1882, and it is expected to extend over a term of 4 months. The Foresters join the School on the 1st July, and they will thus attend two terms of theoretical instruction of 4 months each, and one term of practical instruction during the intervening 8 months. Those who do not earn the Forest Ranger's certificate at the end of the 16 months may be retained at the School for an additional term of 12 months, or remanded to their province as unfit for the executive branch of the service.

15. **Fodder and Fuel Reserves.**—The establishment of combined fodder and fuel reserves was referred to in last year's Review, and a good stride in advance has been made during the last twelve months.

In addition to the Ajmere and Merwara Reserves mentioned in last year's Review, a fodder and fuel reserve has been established near Amraoti. In the North-Western Provinces a scheme is under discussion for taking up 100 square miles of usár (saline) land, with the view of transforming the several blocks into grass and fuel reserves. Experiments in this direction were commenced some two years ago by the Agricultural Department of the Province, but it is now proposed that the Forest Department shall take over the work.

The Government of Madras, it is believed, has this subject now under consideration, and salutary measures are likely to be adopted shortly.

The Punjab possesses some 15,000 square miles of so-called rákh lands scattered over the various districts. Only a small portion of this area has as yet been definitely set aside for the supply of fodder and fuel, but it is hoped that this work will be rapidly advanced now, by deciding what areas are to be maintained permanently for fodder and fuel, and what parts shall be thrown open for the extension of cultivation. The system of District Forest Officers will in the Punjab, more than anywhere else, facilitate the solution of the questions involved, and the sooner it is introduced into that Province the better.

16. Generally speaking, the establishment of fodder aud fuel reserves is of the utmost importance in the dry districts of North-Western, Central, and Southern India, and the subject cannot be pressed too strongly upon the attention of Local Governments, whose duty it is to prevent or reduce the mortality of cattle during years of famine, apart from the fact that the increase in the supply of fuel must ultimately restore manure to its legitimate use, instead of its being burned, as at present, over large stretches of country.

17. **Government Agency** *vs.* **Private Enterprise.**—Connected with the organisation of the future is the question whether the forests shall be worked by Government agency, or by private enterprise. When forest conservancy was first commenced, working by Government agency had to be resorted to, because it was essential to change the wasteful system in force for one based on economic principles; but now that conservancy has succeeded in getting the greater portion of the forest areas fairly in hand, the question has been raised whether the working could not gradually be made over again to private parties. The experience gained in Burma is certainly not encouraging, but there, it appears, adverse agencies were at work, which can easily be rendered harmless in the future. In the Central Circle of the North-Western Provinces, a system of cutting sleepers by private agency has been introduced, which, it is believed, has worked satisfactorily. A contractor undertook to cut about a lakh of sleepers out of certain timber set aside for the purpose, under the simple arrangement that Government shall receive one rupee royalty per sleeper when they are sold, while the whole of the financial risk remains with the contractor.

18. The important point is, that in all high timber forests the marking of the trees must rest with the officers of the Forest Department. If, in addition to this, conditions destined to secure an economical working can be enforced, then the extraction of the material may safely be handed over to private parties. Of course, it cannot be expected that the direct return to Government will be quite as high as under the system of Government agency (and in connection with this subject attention is invited to Chapter IV of this Review), because contractors expect to realise a certain amount of profit; but the difference need not be great, and the indirect advantages are considerable. If relieved of departmental timber and fuel works, the Forest staff will be able to devote a much larger portion of its time to protective and reproductive measures, by which the yield of the forests will ultimately be greatly enhanced. It is not intended to change all at once the system now in force, and in certain cases it may be necessary to retain the work in the hands of Government for years to come; but the subject should be kept in view, and where the working can be made over to private enterprise without serious loss to Government, the matter should be taken into consideration.

19. **Central Office of Forest Accounts.**—The organisation of a Central Office of Forest Accounts has been so great a benefit to the Department, that the matter deserves being mentioned here. The following account is taken from a Note by Mr. Brandis:—

Until 1860 the accounts of the Forest Department in the different Provinces were audited by the local Accountants General. At that time one of the numerous obstacles to progress in Burma was the difficulty of getting the monthly Forest accounts audited. Almost every charge connected with timber operations or other forest work was objected to or formed the subject of lengthy correspondence. The office establishment of the Superintendent of Forests had to be increased and a separate Deputy Superintendent had to be

appointed, chiefly to look after the accounts, and to carry on the correspondence with the Accountant General in Calcutta.

The inconvenience was so great that a remedy became necessary, and this was found in the transfer of the accounts from the Accountant General, Calcutta, to the Controller, Public Works Accounts, at Rangoon. A simple and practical system of accounts was then elaborated, and the forms adopted at that time have been the basis of the present system of Forest accounts. The control and audit was exercised in a manner suitable to the requirements of the Department, and from that time all difficulty in respect of the accounts of the Burma Forests ceased.

A similar system was soon afterwards adopted in Oudh, the Punjab, and other provinces.

20. About 1866 a re-action set in, and the control and audit of the Forest accounts was transferred to the Provincial Accountants General. This arrangement did not give satisfaction, and in 1871 it was decided to entrust the Conservator of Forests in each Province with the entire control and audit of the accounts. Already in 1874 doubts were entertained as to whether the control and audit of the accounts was properly performed by Conservators, and an enquiry was held, the result of which was the introduction, in 1877, of a new system, which has gradually developed into that now in force.

It was arranged that the divisional accounts should continue to be rendered to the Conservator for scrutiny in the first instance, but that they should afterwards be transferred for final audit to the Comptroller General. For the latter purpose an officer of the Forest Department of some experience and standing was attached to the Comptroller General's Office, with the designation of Assistant Comptroller General.

This system contemplated that the Conservator should watch the stock accounts, the working accounts, and the revenue accounts, while the Comptroller General (Forests) should do the work of pure audit and account.

It was, however, soon found that a considerable amount of mechanical check was done twice—once in the Conservator's and a second time in the Comptroller General's Office. In order to see whether this could not be avoided, it was arranged, as an experiment, that the monthly accounts of divisional officers in the Lower Provinces of Bengal should be sent for examination and audit to the Comptroller General direct, without passing through the Office of the Conservator of Forests, the latter officer being kept informed of the progress of receipts and charges by being furnished with a copy of the classified abstract of receipts and charges, which is sent to him by the Divisional Officer on the same day as that on which he despatched his accounts to the Comptroller General. This experiment was commenced on the 1st April 1878, and, as the results were favourable, it was decided to extend the system to all the Provinces under the Government of India.

21. Since the 1st April 1880 the Forest Branch of the Comptroller General's Office does the work of departmental audit and control, as well as that of pure audit and account.

This system has been attended with most satisfactory results. The check is as perfect as under the circumstances of the case it can be made, and at the same time the preparation of, and the correspondence regarding, the accounts takes up as little as possible of the time and attention of Conservators and of Divisional Officers. Moreover, the entire business connected with the accounts is done by one central office and by an officer practically acquainted with forest business. This, it may be said, is as necessary in the Forest Department as it is in the Public Works and Military Departments, because in the present condition of the forest business a great deal more is required from the officer in charge of the accounts, than mechanical check and adherence to rules, such as might be expected where the accounts are in charge of an ordinary member of the Accounts Department who is unacquainted with the peculiarities of forest work. In the latter case it would be almost impossible to exercise a searching control over the timber transactions without taking up a large proportion of the time of the Divisional Officers by references and by asking for explanations.

22. It is believed that some general changes in regard to the organisation of the system of audit and account are contemplated by Government; but as regards the forests, it will be best to permit the continuous development of the system now in force. The peculiar circumstances of the forest business require that Conservators and Divisional Officers should be on the move constantly, and that their time should be taken up as little as possible by office and account work. Under these circumstances, the most economical arrangement is the maintenance of a central office in which all the work of control, audit and account is performed. No other arrangement can possibly be as economical as this, and if the control were again localised, the necessary result would be increased expense, leaving out of consideration the fact that Conservators and Divisional Officers would again be tied down to their desks— a result which would be detrimental to the working of the Department.

CHAPTER I.

RESERVED AND LEASED FORESTS.

Area and Boundaries.

23. The area of the Reserved Forests in the Provinces under the Government of India has undergone the following changes during the last five years :—

	Square miles.
Area on the 1st April 1877	17,386
„ „ 1878	17,671
„ „ 1879	14,673
„ „ 1880	14,890
„ „ 1881	16,246

As explained in the Review for 1878-79, the area of reserves was temporarily reduced in consequence of the passing of the Indian Forest Act of 1878. During the year 1879-80 the procedure prescribed in Chapter II of that Act was set in motion, but only a very small area was actually gazetted as reserves during that year. Since then, however, fair progress has been made, so that the area added during the year 1880-81 amounts to 1,356 square miles, and considerable further additions may be expected to take place for some years to come.

24. The details of the changes which took place during the year under review may be seen from the following statement :—

Province.	Area of Reserved Forests on		Legal authority under which forests have been reserved.
	1st April 1880.	31st March 1881.	
	Sq. miles.	Sq. miles.	
Bengal	2,945	3,411	Indian Forest Act, 1878.
North-Western Provinces and Oudh ...	3,279	3,313	Ditto ditto, and lease from the Garhwal State.
Punjab	795	943	Indian Forest Act, 1878; Hazára Forest Regulation, 1873; lease from Native States.
Central Provinces	2,535	2,535	Indian Forest Act, 1878.
British Burma	1,612	2,288	Government Forest Act, 1865, and Act VII of 1869.
Coorg	220	233	Government Forest Act, 1865.
Ajmere	101	122	Ajmere Forest Regulation, 1874.
Assam	2,015	2,015	Indian Forest Act, 1878.
Total ...	13,502	14,860	
Berar	1,388	1,386	Forest Rules, 1871.
Grand Total ...	14,890	16,246	

These areas have been reserved under a variety of legal enactments, and they may, accordingly, be classified as follows:—

	Square miles.
Under the Indian Forest Act, 1878	11,590
„ Government Forest Act, 1865, and Act VII of 1869 ...	2,521
„ Local Rules, Hazára	236
„ „ Ajmere	122
„ „ Berar	1,386
Leased Forests	391
Total	16,246

25. **Bengal.**—It will be noticed that Bengal, where Forest conservancy in a systematic manner was started at a comparatively late date, has now surpassed all other Provinces, and a similar activity has been displayed in Assam. In Bengal an area of 466 square miles was added during the year, and proposals for further additions were under discussion at the close of the year.

North-Western Provinces and Oudh.—The small changes are due to corrections and transfers. It is, however, proposed to reserve additional areas in the Gonda and Gorakhpur Districts of Oudh, while a proposal is now before Government to establish forest and fodder reserves in the Central Circle. In Tehri-Garhwál and Bashahr considerable areas have yet to be brought on the books of the Department.

Punjab.—Although Forest conservancy was commenced at an early date, the work of establishing Reserved State Forests is very backward. Only an area of 943 square miles has been actually gazetted, of which 152 square miles were added during the year. It has been reported that the work preliminary to reservation has been pushed on during the year, but the delays that have occurred are far from satisfactory. No doubt the difficulties to be encountered are great, but the present state of affairs is all the more to be regretted, because in no other Province of India is the permanent maintenance as forest of a certain proportion of the area more important than in the dry climate of the Punjab.

Central Provinces.—No changes have taken place. The work of deciding what parts of the second class reserves should be transferred to the first class reserves remains to be done.

British Burma.—The work of reservation was, until a few years ago, very backward, but a vigorous start has been made lately, and 599 square miles were gazetted during the year, while an additional area of 1,091 square miles has been reported on by the Forest Settlement Officers. At this rate Burma will soon be brought on a par with the more advanced Provinces.

Coorg.—The changes recorded are chiefly due to corrections.

Ajmere.—21 square miles have been added during the year, and further reservations are contemplated.

Assam.—No change has taken place during the year under review, but various additions were expected to be made in 1881-82.

Berar.—Although only a correction, amounting to two square miles, has occurred, a very important measure was carried out during the year, namely, the formation of the Amraoti Hills Reserve as a "*forest and fodder reserve.*" Out of a total area of 49,847 acres, a block comprising 17,944 acres has been closed, while 31,903 acres remain open to meet the immediate wants of the people. The formation of reserves (not protected forests), like that on the Amraoti Hills, which are destined to provide permanent supplies of wood and fodder for the surrounding districts, is of the highest importance in all parts of India which are liable to suffer from periodical drought, and it is hoped that the example set by the administration in Berar may be imitated by the Governments of all Provinces similarly situated.

26. **Boundaries.**—The proper demarcation of the reserves is, of course, a measure of the first importance. Unless the boundaries are unmistakably laid down on the ground, protection is in most instances very difficult, if not impossible. In some cases the desire for economy has prevented the clearing of the boundaries, but there can be no doubt that this is false

economy, and the Government of India have on several occasions drawn attention to this point. The provincial reports should always give a clear idea how the work stands in the case of each reserve, shewing what part of the boundary is in good order, and what portion remains to be cleared or demarcated. This information should be given in miles of boundary and in the form of a tabular statement, either for each Division, or for the whole Province.

27. **Cost of Demarcation.**—The total cost of demarcation charged during the year amounts to Rs. 53,002, while the increase in the area of reserves is equal to 1,356 square miles. These data compare as follow with the corresponding figures of the two previous years :—

Year.	Area of reserves at the end of the year.	Outlay on demarcation, &c.
	Sq. miles.	Rs.
1878-79	14,673	38,855
1879-80	14,890	45,299
1880-81	16,246	53,002

The outlay on account of compensation for land and rights during the last three years stands as follows :—

Year.	Outlay.
	Rs.
1878-79	64,704
1879-80	4,610
1880-81	17,333

28. **Leased Forests.**—Of the area given above as Reserved Forests for 1880-81, 391 square miles are Leased Forests. The rent paid on account of these forests, including payments to shareholders in forests managed by Government, amounts to Rs. 75,341, which is distributed as follows :—

	Rs.
North-Western Provinces (for lease of forests in Tehri-Garhwal)	12,501
Punjab (including payments for the lease of the forests in Bashahr and Chamba, to shareholders in Kalesar, and half seignorage on account of timber cut in the Hazára forests) ...	45,720
Berar (annual payment to Melghát Rajas)	17,120
Total ...	75,341

During the last five years the totals have been—

	Rs.
1876-77	61,774
1877-78	62,814
1878-79	62,174
1879-80	61,931
1880-81	75,341

This statement shows for 1880-81, an increase of Rs. 13,410 on the sum expended during the previous year, which is chiefly due to the payment of an instalment of Rs. 10,500 to the Rajah of Chamba, in the Punjab, in March 1881, instead of in April, when it became due.

Protection from Fire.

29. Fire protection is steadily extending, so that, in the British Provinces alone, upwards of two millions of acres have now been taken under protection. The following table shows the results obtained in 1880-81:—

Province.	Acres.	Outlay during the year.	Outlay per acre protected.	Total outlay from commencement.	Date to which expenditure has been incurred.	Year when fire conservancy commenced.
		Rs.	Rs. A. P.	Rs.		
Bengal	406,032	8,878	0 0 4	27,162	30th June 1881 ...	1872
North-Western Provinces and Oudh.	490,618	26,937	0 0 10	1,16,951	Ditto	1872
Punjab	...	...	...	...	.....	...
Central Provinces ...	869,828	13,383	0 0 3	1,14,379	30th June 1881 ...	1864
British Burma ...	76,858	10,577	0 2 2	76,297	Ditto	1857
Coorg	106,768	2,927	0 0 5	13,682	31st May 1881	1876
Ajmere	75,658	1,139	0 0 3	4,793	30th June 1881 ...	1874
Assam	102,940	6,030	0 0 11	26,689	Ditto	1873
Total ...	2,128,702	69,871	...	3,79,953		
Berar	555,678	3,129	0 0 1	19,605	Ditto	1870
GRAND TOTAL ...	2,684,380	73,000	...	3,99,558		

The totals for the last 4 years, showing the areas attempted and the results, are as follow:—

Year.	Area attempted, in acres.	Failures, in acres.	Proportion of failures to area attempted, in per cent.
1877-78	2,075,327	332,936	16
1878-79	2,223,542	342,961	15
1879-80	2,606,130	232,104	9
1880 81	2,857,716	173,336	6

30. Although the percentage of failures has considerably decreased during the last two years, doubts are entertained whether this really indicates a substantial and lasting improvement. In the first instance, new and extensive areas have been taken under protection, which have not been shown separately from the areas protected previously; and, secondly, the last two years have been specially favourable for fire protection. The results of the season just passed, 1881-82, show that the above remarks are fully justified, as numerous and extensive fires have taken place in most Provinces simply because the season was unfavourable. Under these circumstances it cannot be said that, however favourable the results of the years 1879-80 and 1880-81 may have been, the business of fire protection has been fully mastered. The first thing to be done, under these circumstances, is not to extend the areas attempted any further until absolute success has been achieved for a number of years; and when, hereafter, operations are again extended, new areas must be shown separately, so as to enable Government to follow up the fate of each area through a number of years.

31. The following table shows the results of fire protection in the several Provinces for the last 4 years :—

BENGAL.

Year.	Area in acres.		Proportion of failures to area attempted, in per cent.	Cost per acre protected.
	Attempted.	Protected.		Rs. As. P.
1877-78	122,728	78,834	36	0 0 5
1878-79	189,653	106,754	44	0 0 4
1879-80	447,836	423,105	5	0 0 5
1880-81	460,396	406,032	12	0 0 4

ASSAM.

1877-78	89,761	60,028	33	0 1 0
1878-79	90,342	33,259	63	0 1 11
1879-80	92,605	91,935	...	0 1 1
1880-81	104,325	102,940	1	0 0 11

NORTH-WESTERN PROVINCES AND OUDH.

1877-78	376,384	344,658	8	0 0 10
1878-79	392,012	301,291	23	0 0 9
1879-80	429,413	423,169	1	0 0 10
1880-81	507,816	490,618	1	0 0 10

CENTRAL PROVINCES.

1877-78	702,310	575,304	18	0 0 3
1878-79	749,319	691,363	8	0 0 3
1879-80	827,470	715,773	13	0 0 3
1880-81	924,380	869,828	6	0 0 3

BRITISH BURMA.

1877-78	4,215	68,198	19	0 1 11
1878-79	74,867	71,322	5	0 2 2
1879-80	98,637	96,413	2	0 1 6
1880-81	96,218	76,858	20	0 2 2

COORG.

Year.	Area in acres.		Proportion of failures to area attempted, in per cent.	Cost per acre protected.
	Attempted.	Protected.		
				Rs. As. P.
1877-78	21,306	16,106	24	0 1 11
1878-79	82,166	76,896	6	0 0 9
1879-80	122,849	102,865	16	0 0 8
1880-81	123,278	106,768	14	0 0 5
AJMERE.				
1877-78	44,686	44,686	...	0 0 1
1878-79	44,686	44,659	...	0 0 3
1879-80	64,428	62,514	3	0 0 3
1880-81	76,631	75,658	1	0 0 3
BERAR.				
1877-78	633,937	554,577	12	0 0 1
1878-79	600,497	555,037	7	0 0 1
1879-80	522,892	458,252	12	0 0 1
1880-81	564,672	555,678	2	0 0 1

In the Punjab no special measures against forest fires have been considered necessary so far. In 1879-80 an area of 142,599 acres, or 5 per cent. of the total area under the management of the Forest Department, was overrun by fires. The subject was taken up vigorously by the Government and the Conservator of Forests, and, in consequence of a stricter control and supervision, the area burnt in 1880-81 amounted to 22,073 acres only, which is less than 1 per cent. of the total forest area managed by the Department.

32. The cost of fire-protection is as yet moderate, as will be seen from the subjoined abstract, giving the totals of all Provinces:—

Year.	Area successfully protected, in acres.	Cost.		
		Total.	Per acre.	
		Rs.	Rs. As. P.	
1877-78 ...	1,742,391	47,768	0 0 5	
1878-79 ...	1,880,581	49,993	0 0 5	
1879-80 ...	2,374,026	69,780	0 0 6	
1880-81 ...	2,684,380	73,000	0 0 5	
Average ...	2,170,344	60,135	0 0 5	

If absolute success is to be secured, the cost must be somewhat more heavy than in past years, but the main point is to establish a systematic and efficient organisation of the work, so as to ensure uninterrupted vigilance.

Plantations and other Reproductive Measures.

33. It has frequently been stated that reproduction in the greater part of the Indian forests must be effected by natural means; that is to say, by treating them in such a manner as to ensure the re-stocking of cleared areas without having recourse to planting. It is in this that the skill of the Forester shows itself, and it is for this reason that so much stress has been laid on the continental training of our Forest Officers. Artificial planting is generally expensive in India, and as extensive areas have to be dealt with, the average revenue per acre from which is small, reproduction by natural means will always form the mainstay. At the same time artifical reproduction, or sowing and planting, must be resorted to in many cases, as, for instance, where blanks have to be stocked, where natural reproduction has failed, where it is not likely to be successful within a reasonable period of time, or where forests do not possess the desired mixture of species.

34. It is generally not easy, if it is not impossible, to represent, in figures or in a tabulated form, the work done in natural reproduction, or that of natural and artificial reproduction combined, and the practice has, therefore, grown up of recording in this manner only the results of regular plantations. The following statement exhibits the state of the plantations for the year under review :—

Province.	Area.				Expenditure.		
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.	Previous to the year.	During the year.	Total.
	Acres.	Acres	Acres.	Acres.	Rs.	Rs.	Rs.
Bengal	940	267	...	1,207	88,126	10,328	98,454
North-Western Provinces and Oudh.	2,262	226	...	2,488	39,671	4,266	43,937
Punjab	20,328	15	3,216	17,127	5,95,932	23,315	6,19,247
Central Provinces	...	...	...	...	...	...	...
British Burma	3,389	155	...	3,544	3,00,689	13,585	3,14,274
Coorg	580	82	334	328	35,915	7,166	43,081
Ajmere	416	10	16	410	33,906	2,886	36,792
Assam	1,088	6	...	1,094	57,327	13,819	71,146
Total ...	29,003	761	3,566	26,198	11,51,566	75,365	12,26,931
Berar	1,504	...	95	1,409	32,808	407	33,215*
Grand Total ...	30,507	761	3,661	27,607	11,84,374	75,772	12,60,146
Deduct revenue	...	...	...	...	1,57,649	Figures not given in the Punjab Report for 1880-81.	
Net outlay on plantations ...	...	...	...	...	10,26,725	...	...

* This amount does not include the cost of *failures*.

It will be noticed that the operations have so far extended over 27,607 acres, or at the rate of about 3 square miles per annum. At this rate about 300 square miles would be dealt with in the course of a century, while the present area of our Reserved Forests alone comes to 16,246 square miles. It is evident, therefore, that regular plantations can only touch a small fraction of the

forests; and it seems highly desirable that the reproductive measures, other than regular plantations, should be dealt with in detail in the Annual Reports, so as to enable Government to judge of the merits of the management in the various Provinces.

35. **Bengal.**—An increase of 267 acres in the planted area has been recorded. The chief extensions consist of 48 acres at Bamanpokri, in the Kurseong Division, and of 202 acres at Buxa. At Bamanpokri an area already partly stocked with natural growth was filled up by planting teak and other trees in patches arranged in lines 50 feet apart, with a distance of 50 feet between the patches. The system followed in the Buxa Reserve consists of clearing 4 feet bands through the grass at a distance of 20 feet apart, and filling up these bands partly by transplants 2 feet apart, and partly by broad-cast sowings of sál and other trees. This system promises to be a cheap and effective remedy for re-stocking the extensive savannahs in the reserves of the Buxa and Jalpaiguri Divisions.

36. **North-Western Provinces and Oudh.**—An area of 226 acres was added to the regular plantations. Of this, 118 acres consist of sissu plantations made in Oudh. No decided success has as yet been achieved in these operations. The rest consists of 75 acres transferred with the Patri Forest from the Superintendent of the Roorkee Workshops to the Forest Department, and of small experimental plantations in the hills and in the plains.

Planting in the higher hills seems to have been fairly started now, but in the outer hills and plains operations are as yet in the experimental stage. On the whole, much has yet to be learned as regards the artificial reproduction of deodar and sál. Fortunately the natural reproduction of sál is good, and fair progress has been made in studying the conditions under which deodar will reproduce itself naturally.

37. **Punjab.**—The area of plantations has been thoroughly scrutinised during the year, and all parts not actually stocked have been excluded. This has caused a reduction of 3,201 acres, and the figures stand now as follow:—

	Acres.
Regular plantations ...	15,669
Rakh improvement ...	1,458
Total ...	17,127

costing Rs. 6,19,247. The plantations have already yielded considerable returns, and it is expected that Changa Manga will, in future, steadily yield a surplus. This plantation comprises an area of 11,409 acres; it was commenced in 1866, so that the oldest plantings were, on the 1st April 1881, fifteen years old. The total expenditure amounts to Rs. 4,46,812, while the receipts come to Rs. 1,03,911, leaving a net expenditure of Rs. 3,42,901. As the greater part is stocked with sissu, or tali, it has been decided to work the plantation as coppice, with a rotation of 10 years. The trees are cut partly flush with the ground, and partly stubbed out, both methods yielding satisfactory results.

The rákh improvement in the Punjab is a very difficult piece of work. The rainfall is small and very uncertain, so that planting without irrigation can only succeed in years when the rains are specially favourable. So far, not much success has been achieved.

The planting of deodar, especially in Kalatop, where 97,437 seedlings have been planted out into the forest during the last six years, has been fairly successful; and in the Sutlej Valley several cases of successful natural reproduction, by means of regeneration cuttings, may be seen.

38.—**Central Provinces.**—Various cultural operations have been carried out during the year, but they have not been described with sufficient precision, so as to enable a judgment to be formed of the success obtained.

39.—**British Burma.**—It is satisfactory to notice that, although much of the officers' time has been spent in demarcation work, a considerable area

has been planted with teak during the year, as may be seen from the subjoined data:—

	Area planted, in acres.			Outlay, in Rupees.	
	At the beginning of the year.	Added during the year.	Total.	Total from the commencement.	Per acre.
Regular plantations ...	3,389	155	3,544	3,14,274	89
Toungya do. ...	2,515	1,072	3,587	31,202	9
Total ...	5,904	1,227	7,131	3,45,476	48

It has been suggested that 200 acres of regular plantations, and at least 1,000 acres of toungya plantations, should be made annually. The cost of these operations was estimated at Rs. 40 per acre for the former, and Rs. 14 for the latter. The estimated areas have been fairly worked up to, but it appears that the cost of the regular plantations at any rate will be considerably higher than the estimate.

40. **Coorg.**—The area of plantations has been reduced from 580 to 328 acres, although 82 acres were planted during the year, in consequence of all unstocked areas having been omitted from the returns. The work seems to have received attention during the year, and the results were fairly satisfactory.

41. **Assam.**—Only 6 acres were added to the planted area, which stands now as follows:—

Species of tree.	Area planted, in acres.	Cost.	
		Total.	Per acre.
		Rs.	Rs.
Caoutchouc	912	51,885	57
Teak	150	13,767	92
Sissu	20	1,795	90
Bamboo	2	76	...
Cinchona	2	1,093	...
Miscellaneous	8	2,530	...
Total ...	1,094	71,146	...

The more important plantations are those of caoutchouc and teak. The importance of securing a permanent supply of teak wood is very great, and as Assam has excellent water communication, not only within its own limits, but also with Lower Bengal, it is important to ascertain whether the tree will thrive in Assam. For this purpose the area of 150 acres so far planted will probably be sufficient. As regards caoutchouc, it should be remembered

that Assam and the neighbouring low hills are the true home of the *Ficus elastica*, and that the produce of that tree forms an important article of trade. Unfortunately it has not been found practicable to protect the trees in the natural forests, which have suffered greatly from overtapping. At present the greater portion of the caoutchouc exported from Assam comes from beyond the British frontier; and it cannot be expected that the wild tribes who inhabit the tracts in question will work their India-rubber trees so as to secure a sustained yield. It is, therefore, the duty of the Government of Assam to prevent the trade dying out, by propagating the rubber tree on compact areas, which can easily be protected; in addition to protecting the natural trees, wherever this may be practicable.

42. **Ajmere.**—Planting operations were restricted to an extension of one acre, and the laying out of nurseries covering 9 acres of ground.

43. **Berar.**—No extensions were made, but 95 acres, which proved to be failures, were excluded from the returns. The result of fire protection has been that vast numbers of seedlings have sprung up all over the protected tracts, and this will, no doubt, reduce the necessity for artificial operations. At the same time there must be cases in which the forests are poor in the more valuable species, and where their introduction and extension, by means of planting or sowing, is indicated. It will be necessary, therefore, to resume planting operations as soon as the demarcation of the reserves and their protection against fire and otherwise have been sufficiently advanced to give to the staff the necessary time for such work.

44. Form No. 46, appended to the Annual Reports, gives the area of the regular plantations and their cost. Some of the plantations have, however, yielded considerable returns already, and, if the account is to be of value, these should be deducted from the cost; it is suggested, therefore, that the necessary information may be given in future Reports. It would also be a great improvement if, at the foot of the form, all works of reproduction which cannot be classed as regular plantations were mentioned, in so far as they can be represented by figures.

Forest Survey.

45. The survey of the submontane forests of Kumaun and Garhwál has been continued, while, in addition, certain operations were conducted in the Tons Division of the North-Western Provinces and in Berar. The total outturn of the field work is somewhat smaller than that of 1879-80. The area planetabled comes to 260 square miles, as against 318 square miles in 1879-80; and the area triangulated in 1880-81 amounts to 93, as against 237 square miles in 1879-80. The reason of the falling off is said to be the unhealthiness of the season, which caused a good deal of sickness amongst the staff, and the deputation of separate parties to Ranikhet and Berar, who did work which cannot be indicated in square miles.

46. The cost of the work, which was somewhat high when the Survey Branch was first organised, has been considerably decreased of late, as will be seen from the subjoined data:—

	Cost per square mile. Rs.
Dehra Dún and Saháranpur survey ...	... 310
Jaunsár and Tons „ ...	... 203
Kumaun and Garhwál „ (up to date)	... 115

This is, of course, very satisfactory, and if the cost is still somewhat higher than in the Imperial Survey Department, this is due to the fact that the operations of the Forest Survey are generally conducted in remote and difficult parts of the country, which have naturally been set aside as forests.

47. On the whole, the Forest Survey Branch has now been brought into a high state of efficiency. This being the case, it has been decided to establish shortly an Imperial Working-Plan Branch, which, following the footsteps of the Survey, will be a very important means towards introducing into our State Forests a system of working based on a sustained yield.

Outlay on Demarcation and Improvement of Forests.

48. The following figures show the outlay during the official year divided between the various branches of work:—

Province.	Demarcation, Improvement, and Extension of Forests.—A VIII.						
	Demarcation.	Compensation for land and rights.	Surveys and working plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,161	7,115	201	10,344	11,630	68	35,519
North-Western Provinces and Oudh ...	4,513	5,804	1,939	2,463	23,571	10,915	49,205
Punjab	10,468	589	159	12,812	82	5,893	30,003
Central Provinces	1,526	208	978	3,968	13,456	14,052	34,188
British Burma	21,718	1,750	745	17,000	10,224	5,472	56,909
Coorg	1,678	50	215	7,166	2,833	...	11,942
Assam	4,730	154	4,747	13,820	5,609	3,060	32,120
Ajmere	2	1,663	...	1,667	1,145	46	4,523
Surveys	...	...	5,098	...	...	...	5,098
Total ...	50,796	17,333	14,082	69,240	68,550	39,506	2,59,507
Berar	2,206	...	76	1,303	3,373	460	7,418
Grand Total ...	53,002	17,333	14,158	70,543	71,923	39,966	2,66,925

The outlay under this head during the last five years has been as follows:—

	Rs.
1876-77	2,21,110
1877-78	2,42,962
1878-79	2,98,962
1879-80	2,55,647
1880-81	2,66,925
Average, per annum ...	2,57,121

Communications and Buildings.

49. The outlay on communications, buildings, and other works charged in the accounts of the year has been as follows:—

Province.	Communications and Buildings.—A VII.			
	Roads and bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	10,516	11,254	60	21,830
North-Western Provinces and Oudh ...	39,701	28,688	3,337	71,726
Punjab	4,553	3,624	24	8,201
Central Provinces	480	2,338	2,114	4,932
British Burma	1,920	6,618	683	9,221
Coorg	186	304	2	492
Assam	3,356	7,824	253	11,433
Ajmere	50	36	...	86
Surveys	...	...	...	...
Total ...	60,762	60,686	6,473	1,27,921
Berar	8,532	1,684	187	10,403
Grand Total ...	69,294	62,370	6,660	1,38,324

The following sums have been spent under this head during the last five years:—

		Rs.
1876-77	...	1,14,247
1877-78	...	1,11,779
1878-79	...	1,21,822
1879-80	...	1,66,193
1880-81	...	1,38,324
Average, per annum	...	1,30,473

It will be noticed that the outlay during the year is slightly in excess of the average of the last five years.

50. **Bengal.**—Thirty-one miles of ordinary forest roads have been laid out, and a metalled cart road tapping the Goompahar Forest has been commenced. A rest-house for officers at Lopchu has been completed, while various smaller buildings and 5 boats (for the Sundarbans) were constructed.

51. **North-Western Provinces and Oudh.**—Communications and buildings have continued to receive attention during the year. The construction of forest roads and of timber slides was taken up vigorously many years ago, and this important branch of forest management has been specially advanced in the North-Western Provinces and in Oudh.

In the Central Circle much damage was done by the unusually heavy rains of September 1880, but most of the injured roads have since been repaired and additional lines opened. In Oudh 600 miles of old roads and fire-paths were kept in order, while 77 miles of new roads were opened out; at the same time 50 old bridges have been repaired and 6 new bridges constructed.

In the School Circle various roads in Dehra Dún, Saháranpur, and Jaunsár have been made. There are now 84 miles of fair-weather roads open in the Dún forests, and 130 miles of hill roads in Jaunsár.

The construction of forest rest-houses is steadily proceeding, 14 having been completed during the year. This is a most important measure, as a properly distributed system of rest-houses will enable the officers of the Department to visit all parts of their charges at any time of the year.

52. **Punjab.**—In the plains of the Punjab not much need be done by the Department as far as roads are concerned, since the forests are generally so open that the officers can "gallop" through them. In the hill forests, however, much remains to be done. During the year a new road from Natyagulli to Thandiáni, in Hazára, was commenced, and various paths and slides in other parts were made. It is hoped that no time will be lost in making the deodar forests thoroughly accessible; the success of the timber operations and of the cultural measures will depend on this.

A rest-house for officers, at Thandiáni, was purchased during the year, and various others have been repaired and extended. On the whole, there is a fair number of rest-houses in the Punjab forests.

53. **Central Provinces.**—The principal work, it appears, was the widening of a narrow passage in the Nerbudda.

54. **Burma.**—Only minor works and repairs were attended to during the year.

55. **Assam.**—A considerable length of inspection paths and other lines of communication were opened out, or kept open. At Cachar and Sibsagar forest bungalows were commenced during the year. At Barabada, in the Goalpara Division, a substantial rest-house for officers has been completed.

CHAPTER II.

MANAGEMENT OF GOVERNMENT FORESTS NOT RESERVED.

56. **Bengal.**—The Unreserved Forests so far taken notice of by Government are the following :—

	Sq. miles.
Sundarbans protected forests	1,925
Khordah „ „	400
Total ...	2,325
Angul open forests	Area unknown.
Jalpaiguri „ „	8
Chittagong „ „	5,100
Palamow „ „	33
Saranda (about)	400
Sonthal Pergunnahs (about)	60

In the Sundarbans no change in the system of administration has taken place during the year. The forests will remain under the direct management of the Forest Department until they are required for the extension of cultivation.

The Khordah forests are under the management of the Collector, assisted by a staff of Forest officials, and the Angul forests are now being examined. It has been suggested to constitute as reserves the more important parts of these forests, and to place the whole area under the direct management of a Deputy Conservator, who will be the Assistant to the Commissioner of Orissa in the Forest Branch.

The forests in the Sonthal Pergunnahs have hitherto been under the management of the Deputy Commissioner of the district, but it is now proposed to make them over to the Forest Department.

The Chittagong forests are under the management of a District Forest Officer, for the purpose of deriving a revenue from them, and he is subordinate to the Deputy Commissioner of the Chittagong Hill Tracts.

The forests in Jalpaiguri and Saranda are under settlement as reserves.

57. **North-Western Provinces and Oudh.**—The following is a list of the Unreserved Forests:—

	Sq. miles.
Naini Tal protected forests	38
Ranikhet „ „	59
Lalitpur „ „	3
Total ...	100

In addition, there are considerable areas of Government forests in Garwhal, Kumaun and the Terai, and of leased forests in Tehri-Garwhal and in Bashahr.

58. **Punjab.**—The area of gazetted Protected Forests amounts to 311 square miles, but the total area of all Unreserved Government and Leased Forests, including the rákhs, comes to 17,125 square miles, of which 3,851 square miles are under the management of the Forest Department; the rest are managed by the Deputy Commissioners. Of the area under the Forest Department, a very large portion is under settlement as reserves, while the Local Government has decided that others, as for instance the valuable deodar forests in Kulu, shall be gazetted as Protected Forests.

59. **Central Provinces.**—The so-called second class reserves in these Provinces are at present, to all intents and purposes, Unreserved Forests; their area amounts to 16,850 square miles, while there are, besides, 281 square miles of other Unreserved Forests, or a total of 17,131 square miles. The management of these forests has been fully explained in previous Reviews. It has been urged upon the Local Government that the first and most important step is to select the more valuable parts of the areas, especially in the vicinity of towns, large villages, and other centres of consumption, and to treat them as first class reserves, while the remainder will yield chiefly pasture and fuel.

60. **British Burma.**—The area of Unreserved Forests in Burma is very large, and it may be roughly estimated as equal to, at least, half the area of the whole Province. Until lately, only teak was a reserved tree: from the 1st July 1882, however, a number of other trees will be reserved; payment has to be made on all material exported. On the whole, the restrictions enforced in the Unreserved Forests are as yet very moderate.

61. **Assam.**—No changes have taken place in the areas, which stand as follow:—

	Sq. miles
Protected Forests	689
Other Unreserved Government Forests	5,371
Total ...	6,060

The Forest Officers in Assam have been made subordinate to the Deputy Commissioners, and they now manage all forest lands.

62. **Berar.**—The Unreserved Forests cover an area of 2,870 square miles. It has been suggested that the management of these areas should be made over to District Forest Officers, who will be subordinate to the Deputy Commissioners. A classification of the areas is now being made, with the view of ascertaining what portions are required for the production of wood, as grass preserves, or grazing grounds, and what parts should be kept open for the extension of cultivation.

63. To sum up, it will be noticed that the information regarding the Unreserved Government Forests is, in several Provinces, as yet very scanty, and it is hoped that fairly accurate statistics will gradually be supplied under this head.

CHAPTER III.

PROTECTION OF FORESTS.

64. The following statement exhibits the number of prosecutions for breaches of forest rules during the year under review:—

Province.	Number of persons		
	Prosecuted.	Convicted or under trial.	Acquitted.
Bengal	143	112	31
North-Western Provinces and Oudh	1,008	824	184
Punjab	2,188	1,131	1,057
Central Provinces	1,770	1,554	216
British Burma	181	151	30
Coorg	7	3	4
Ajmere	285	122	163
Assam	121	105	16
Total ...	5,703	4,002	1,701
Berar	764	591	173
Grand Total ...	6,467	4,593	1,874

The totals for the last seven years may be seen from the subjoined table:—

Year.	Number of persons			
	Prosecuted.	Convicted or under trial.	Acquitted.	Percentage of acquittals on prosecutions.
1874-75	2,591	2,340	251	10
1875-76	4,088	3,714	374	9
1876-77	4,250	3,186	1,064	25
1877-78	4,527	3,158	1,369	30
1878-79	4,435	3,458	977	22
1879-80	6,724	5,311	1,413	21
1880-81	6,467	4,593	1,874	29

It will be observed that there has been a slight falling-off in 1880-81, which occurred in the Central Provinces, as compared with the previous year, and that the total number of prosecutions is exceedingly small as compared with the forest area under management. Roughly speaking, there has been during the year 1880-81 *one prosecution for every ten square miles of forest* under departmental management.

It stands to reason that improvement in general protection must temporarily be accompanied by an increase of prosecutions, but when further progress has been made, and the protective staff directs its energies chiefly to the prevention of breaches of the rules, rather than to the bringing of offenders to justice, a considerable falling off in the number of prosecutions must be the natural consequence.

65. On the whole, the Forest rules have been worked cautiously, and there are signs, from various parts of the country, that the people begin to appreciate the beneficial effects to themselves of forest conservancy, and that they commence to co-operate heartily with the Forest Department.

The Deputy Commissioner of Ellichpur in Berar, for instance, writes as follows:—

"I should like, for your information and the satisfaction of the officers of the Forest Department, to be allowed to record facts that came to my notice on four different occasions, when recently in the Melghat, which point markedly to the contentment of the people in that direction, and the success that has attended the enlistment of their help and interest in forest conservancy.

"Three of the occasions refer to the outbreak of fire in the State Reserves towards Asalwarrah and Gugamal, and towards Kupah in Bairaghar, when I personally witnessed the most rapid concentration of Kurkoos, many from very long distances, who came up in smaller or larger parties quite unbidden, merely on the sight of smoke. On two of these occasions towards Asalwarrah, and the supposed fire at Gugamal (which, however, turned out to be beyond), there were Kurkoos newly settled in the Gangra valley, who had no forest rights or privileges like their brethren settled in certain villages on the outskirts of the Reserve, and whom it was therefore proposed to pay in money for their trouble, but they declined, saying they had voluntarily turned out, hoping that the privileges given to the older people might be extended to them; that in return they would always be ready to turn out.

"At Kupah, in the neighbourhood of the Pili road, where the jungle was fired by a Bannia of the Public Works Department, and where the appearance of the fire was very alarming, and its extension would have done considerable harm, the rapid concentration of the people, some from extraordinarily long distances, was really very astonishing. The fire broke out late in the afternoon, some six miles from my camp, and I went to a neighbouring hill off the road to judge its position, when I saw over a hundred Kurkoos from my direction alone pass in bodies of five, ten, and more at the double. All of these had come away, unbidden, without their evening meal, with only a handful of parched gram, and were out the whole night.

"The fourth occasion was when most of the Patels of Bairagarh and Amnair met me at Chawarakund, a little more than a fortnight ago. Hitherto one of the requests of such an assemblage has invariably been to ask for the curtailment of some portion or other of the reserve; so that more teak (which is getting exhausted in the open tracts) might be available to them; but on this last occasion, except by one Patel, no such proposition was made. On my asking, somewhat surprised for the reason, why? several answered that, though it was true teak was getting exhausted outside the Reserves, yet the preservation of bamboos *within the reserves* compensated them in a way they had not formerly foreseen; that more bamboos could now be got than, owing to the destruction by fire, was ever formerly possible; and that this to them was of great value. It was a decided advance and very pleasing to me to see that the value of our forests was thus beginning to be recognised."

The Resident writes thus:—

"The Officiating Resident desires to acknowledge the ready and liberal spirit in which the Conservator of Forests and Forest Officers generally responded to applications made to them by Civil Officers during the anxious months of July and August, when, the rains having failed, the people were in difficulties about fodder for the cattle. Liberality on an occasion like this does a great deal to make the Department popular with the people."

And the Government of India, in passing orders on the Report for Berar, say:—

"The Governor General in Council has noticed with special gratification that the people have commenced to appreciate the benefit to themselves of forest conservancy, and particularly of protection against fire; this result is, no doubt, largely due to a judicious working of the conservancy rules."

When the organisation indicated in the Introduction of this Review has taken root, there will be no reason why a similar state of affairs should not be established in all other Provinces.

CHAPTER IV.

YIELD AND FINANCIAL RESULTS.

66. Statement I appended to this Review exhibits the Receipts and Charges of the Department in the Provinces under the Government of India for the year 1880-81.

By arranging these data according to the three main heads under Receipts and Charges, the following table has been obtained:—

Particulars.	Receipts.		Charges.		Surplus.	Deficit.
	Amounts.	Budget heads.	Amounts.	Budget heads.		
	Rs.		Rs.		Rs.	Rs.
1. Timber and other produce removed on Government account.	19,25,505	I.	13,08,087	I, ½ of VI, ¼ of B.	6,17,418	...
2. Timber and other produce removed by purchasers, and other revenue.	31,41,301	II, III, IV, V.	6,69,514	II, III, IV, IX, ½ of VI, ¼ of B.	24,71,787	...
3. Formation, protection, and improvement of the forests.	...	...	11,21,742	V, VII, VIII, ½ of B.	...	11,21,742
Total ...	50,66,806	...	30,99,343	...	19,67,463	...

The next table shows the revenue realised and the charges incurred under the two main heads of revenue during the last seven years:—

Year.	Government Agency.			Other Sources.		
	Receipts.	Charges.	Surplus.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1874-75	21,34,690	18,07,019	3,27,671	23,69,694	4,40,196	19,29,498
1875-76	31,29,321	15,38,779	15,90,542	21,91,392	4,90,326	17,01,066
1876-77	22,82,060	17,29,567	5,52,493	23,14,098	5,26,298	17,87,800
1877-78	25,51,986	14,74,551	10,77,435	25,65,567	5,41,608	20,23,959
1878-79	19,98,685	14,36,246	5,62,439	25,35,910	5,99,403	19,36,507
1879-80	20,82,474	13,74,193	7,08,281	28,19,270	6,35,912	21,83,358
1880-81	19,25,505	13,08,087	6,17,418	31,41,301	6,69,514	24,71,787
Average ...	23,00,674	15,24,063	7,76,611	25,62,462	5,57,608	20,04,854

67. These tables were introduced some years ago, and they are useful in showing the total results under each head. At the same time they contain a somewhat dangerous element, in so far that they may convey a wrong impression. The net surplus of the departmental operations during the year under review amounts to Rs. 6,17,418, while that derived from timber, &c., removed by private parties comes to Rs. 24,71,787. At first sight the departmental operations do not compare favourably with the working by private parties, but unless the quantity and quality of material removed under each system is given, it is impossible to draw any conclusions as to their merits. Only in a few cases have these data been supplied, but it may be useful to enter here, for the sake of illustration, those for the Punjab as far as they can be ascertained. The table for that Province for 1880-81 is as follows :—

Particulars.	Receipts.	Charges.	Surplus.	Deficit.
	Rs,	Rs.	Rs.	Rs.
I. Departmental timber operations	3,22,143	2,53,422	68,721	...
II. Other revenue	3,49,536	1,02,802	2,46,734	...
III. Formation, protection and improvement of the forests	...	1,39,144	...	1,39,144
Total ...	6,71,679	4,95,368	1,76,311	...

The quantities of timber and other produce worked out by Government Agency compare as follow with those removed by purchasers :—

Description of material.	Removed by Government Agency.	Removed by private parties.
Timber, cubic feet	476,208	463,320
Firewood, cubic feet stacked	1,140,161	4,981,568
Other items, as bamboos, grazing and fodder grass, &c., value in rupees.	15,725	218,545

Deducting the last two items from the surplus given in the statement preceding the above table, the financial results, as regards the removal of timber and firewood, may be *approximately* represented as follow :—

	Material removed,		Surplus of Receipts over charges.
	Timber.	Firewood.	Rs,
	Cubic feet.	Cubic feet.	
Government Agency	476,208	1,140,161	52,996
Private Enterprise	463,320	4,981,568	28,189

It will be seen that the amount of timber is about the same in either case : the amount of firewood removed by private parties is, however, more than four times that removed by Government Agency, while the surplus derived is only about one-half ; and it follows that the working by Government Agency has financially been more profitable to Government than the work done by private agency. The data given, though only rough, show further how small the surplus derived from the sale of timber and fuel is, as compared with the receipts from other sources ; in other words, Government sell timber and fuel at the lowest price admissible without actual loss to the State.

It is very desirable that the discussion of this subject should be fully entered into in the provincial reports.

68. Statement II appended to this Review exhibits the financial results of the Forest Department in India.

Bengal and Assam.—Amongst the British provinces, Bengal and Assam head the list. Their revenue has risen from Rs. 38,584 in 1865-66 to Rs. 7,30,337, or twenty times the former amount. During the year under review the revenue of these two Provinces, as compared with the previous year, shows an increase of Rs. 1,16,477, which, with the exception of Rs. 4,661, occurred in Bengal. On the whole, it seems probable that the revenue of Bengal will gradually surpass that of any other Province under the Government of India, with the exception of Burma, which is very satisfactory, especially if it is remembered that forest conservancy on a satisfactory footing was commenced in Bengal only 10 years ago.

69. **North-Western Provinces and Oudh.**—The revenue has risen, between 1865-66 and 1880-81, from Rs. 7,70,370 to Rs. 9,42,229; but there has at the same time been a falling off for several years past. It appears that many of the forests were worked beyond their capability for a number of years, and the consequence is a decline in the revenue, until continued conservancy and protection from fire justify again more extensive cuttings.

70. **Punjab.**—Although the revenue has risen from Rs. 2,08,050 to Rs. 6,71,679, it has oscillated in a manner simliar to that observed in the North-Western Provinces, and for the same reason. Here also many forests have been overcut.

71. **Central Provinces.**—The revenue shows the best results after Bengal and Assam, it having in the same period risen from Rs. 2,02,644 to Rs. 8,50,139. There has, however, been a serious decline during the last year, amounting to Rs. 1,56,584.

72. **British Burma.**—The revenue has risen from Rs. 8,98,629 to Rs. 15,16,613, it having stood on one occasion as high as Rs. 17,79,020. In future there will be a loss of revenue amounting to Rs. 2,50,000 per annum, owing to the reduction of duty on foreign timber from 7 per cent. to 1 per cent. *ad valorem.* Still the Burma State Forests are probably the most valuable in India from a financial point of view, and, under proper conservancy, their value should increase further.

73. **Madras.**—The forest revenue has risen from Rs. 3,26,204 to Rs. 5,01,839, the rise having taken place during the year under review.

74. **Bombay.**—The revenue has, during the last sixteen years, risen from Rs. 10,07,610 to Rs. 15,22,807.

75. **Berar.**—In this non-British Province the revenue has developed in the same manner as in Bengal and Assam, it having risen from Rs. 15,106 to Rs. 2,66,556. There has, however, been a decline during the last three years.

76. The following abstract shows the total financial results of the Forest Department in India during the last seventeen years, arranged in periods of five years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1864-65 to 1868-69, (average per year)	35,83,334	21,66,765	14,16,569
1869-70 to 1873-74 „ „	54,71,755	37,96,784	16,74,971
1874-75 to 1878-79 „ „	64,42,051	42,98,872	21,43,179
1879-80	67,92,206	45,45,757	22,46,449
1880-81	71,05,828	45,82,859	25,22,969

This table shows that the revenue and expenditure have increased in about the same proportion, which is satisfactory, if it is remembered that a much larger share of the expenditure is now devoted to the protection and improvement of the forests than was the case in the earlier years of forest administration.

77. The surplus forest revenue of the British Provinces, that is, excluding Berar—and Beluchistan for 1880-81—during the last three years, has been as follows:—

Presidency.	Year.		
	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.
Bengal	12,29,982	15,96,541	18,29,876
Madras	41,890	*Def.* 15,478	1,49,835
Bombay	1,82,732	4,68,399	4,07,711
Total ...	14,54,604	20,49,462	23,87,422

There has been a slight falling-off in Bombay during the last year; but on the whole, these data show satisfactory progress.

78. **Export of Forest Produce.**—The subjoined table gives the quantities of the principal items of forest produce exported from India:—

Articles.	Quantity in tons of 20 cwt.; in the case of Teak, 50 Cubic Feet.		Valuation at Port of Shipment in 1880-81.	
	Average of ten years, 1870-71 to 1879-80.	In 1880-81.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	599	490	10,61,686	2,186
2. Shell-lac	3,007	3,042	43,16,287	1,419
3. Lac-dye	603	315	1,30,201	413
4. Sandalwood, Ebony, and other ornamental woods.	505	(Not known.)	2,78,568	(Not known.)
5. Cutch and Gambier ...	10,911	15,803	42,22,527	267
6. Myrobalans	20,577*	15,781	12,37,087	78
7. Teak	41,495	65,626	50,00,466	76
Total ...	...	...	1,62,46,822	...

The exports of cutch and teak have been larger than the average of the last ten years, while those of lac-dye and myrobalans have fallen off. The total value of the articles exported, at port of shipment, amounts to Rs. 1,62,46,822, as compared with Rs. 1,19,05,024 in 1879-80, which represents an increase of Rs. 43,41,798 in the year under review.

* Average of five years only.

79. **Sandalwood.**—The quantity of sandalwood sold in Coorg during the last three years is shown in the following table :—

Year.	Tons.	Amount realised.	
		Total.	Per Ton.
		Rs.	Rs.
1878-79 ...	33¾	14,346	425
1879-80 ...	101	35,890	355
1880-81 ...	112	20,160	180
Average ...	82	23,465	286

The falling-off in the rate realised in 1880-81 is due to the large proportion of inferior wood which has been sold during the year.

80. **Teak.**—The following table exhibits the trade in teak in British Burma during the last three years :—

Year.	Yield of Government Forests in British Burma.	Imports from Foreign Territory.	Total.	Exports from Rangoon and Moulmein to Indian and other ports.
	In tons of 50 cubic feet.			
1878-79 ...	22,763	170,610	193,373	133,820
1879-80 ...	17,585	157,260	174,845	121,161
1880-81 ...	22,253	124,618	146,871	151,274

The imports from foreign territory have fallen off considerably of late, but now that the duty has been reduced from 7 per cent. to 1 per cent. *ad valorem*, a great increase may be expected, whereby, in addition to the loss of Rs. 2,50,000 on account of duty, a considerable reduction in the price of the teak timber derived from the British forests may be anticipated, unless an increased demand should make up for it.

As girdling operations have been resumed, the yield of the Government forests in British Burma is likely to rise up to about 35,000 tons annually. For the present the yield should not be extended beyond that limit, in order to enable the British forests to make up for the falling-off in imports, which must occur ultimately.

81. **Boxwood.**—During the last two years several consignments of Himalayan box-wood were sent to England. The first of these realised as much as £30 per ton, and it was bought up on speculation by engravers, as it was wood from a new locality. The results have, however, not been satisfactory; the wood cut up badly, and it was found useless for engraving, owing to its being too soft and short-grained. Information has been received that engravers will not buy the consignments now remaining unsold in England. Shuttle-makers and rule-makers may possibly buy it, but it is not likely that more than £15 to £18 per ton will be realised, which is too small a price to make the production and export of boxwood a profitable transaction.

STATEMENT I.

SUMMARY of REVENUE and EXPENDITURE during the YEAR 1880-81.

BUDGET HEADS.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmere.	Surveys.	Total of British Provinces under the Government of India.	Hyderabad Assigned Districts.	Grand Total.
Receipts.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,61,567	4,40,358	3,15,711	76,157	8,61,487	50,932	18,768	13	...	19,24,993	512	19,25,505
II.—Ditto ditto by consumers or purchasers	3,66,192	4,90,176	3,23,368	7,41,669	1,89,086	32,589	1,32,758	600	...	22,76,438	2,62,707	25,39,145
III.—Confiscated drift and waif wood	4,470	6,642	6,432	5,046	1,28,099	...	3,597	...	...	1,54,286	1,491	1,55,777
IV.—Revenue from forests not managed by Government ...	...	...	9,396	10,192	3,25,201	...	12,669	...	...	3,57,458	...	3,57,458
V.—Miscellaneous	29,111	5,053	16,772	17,075	12,740	4,336	1,205	511	272	87,075	1,846	88,921
Total Receipts ...	5,61,340	9,42,229	6,71,679	8,50,139	15,16,613	87,857	1,68,997	1,124	272	48,00,250	2,66,556	50,66,806
Expenditure.												
A.—CONSERVANCY AND WORKS.												
I.—Timber and other produce removed from the forests by Government agency.	84,032	2,29,414	1,28,939	1,39,931	3,36,679	14,334	9,480	18	...	9,42,827	103	9,42,930
II.—Ditto ditto by consumers or purchasers ...	29,565	28,742	2,128	1,46,064	8,071	...	3,090	15	...	2,17,675	15,913	2,33,588
III.—Confiscated drift and waif wood	936	721	914	...	40,943	...	109	...	...	43,623	...	43,623
IV.—Revenue from forests not managed by Government ...	...	...	2,591	...	...	...	...	...	...	2,591	...	2,591
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	12,501	45,720	251	...	...	...	...	...	58,472	17,120	75,592
VI.—Live and dead stock	16,671	18,999	3,637	10,368	20,752	2,816	10,283	85	2,602	86,213	3,200	89,413
VII.—Communications and buildings.	21,830	71,726	8,201	4,932	9,221	492	11,433	86	...	1,27,921	10,403	1,38,324
VIII.—Demarcation, improvement, and extension of forests. ...	35,519	49,205	30,003	34,188	56,909	11,942	32,120	4,523	5,098	2,59,507	7,418	2,66,925
IX.—Miscellaneous	1,066	4,110	3,144	4,652	5,291	372	2,694	28	...	21,357	3,199	24,556
Total Conservancy and Works ...	1,89,619	4,15,418	2,25,277	3,40,386	4,77,866	29,956	69,209	4,755	7,700	17,60,186	57,356	18,17,542
B.—ESTABLISHMENTS.												
I.—Salaries	1,24,723	2,21,355	2,24,343	1,29,891	1,92,711	21,106	60,501	6,738	24,679	10,06,047	60,402	10,66,449
II.—Travelling allowances	16,153	31,434	32,903	14,665	32,053	4,472	9,746	742	5,476	1,47,644	6,119	1,53,763
III.—Contingencies	4,886	11,367	12,845	10,571	9,938	953	3,269	188	2,480	56,497	5,092	61,589
Total Establishments ...	1,45,762	2,64,156	2,70,091	1,55,127	2,34,702	26,531	73,516	7,668	32,635	12,10,188	71,613	12,81,801
Grand Total of Expenditure ...	3,35,381	6,79,574	4,95,368	4,95,513	7,12,568	56,487	1,42,725	12,423	40,335	29,70,374	1,28,969	30,99,343
Surplus ...	2,25,959	2,62,655	1,76,311	3,54,626	8,04,045	31,370	26,272	...	...	18,29,876	1,37,587	19,67,463
Deficit ...	...	...	...	...	...	...	...	11,299	40,063	...	...	...

STATEMENT II.

Receipts and Charges of the Forest Department throughout India during the seventeen years from 1864-65 to 1880-81.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,49,851	1,16,633	1,85,933	1,98,274	2,22,401	4,26,228	4,16,024	4,49,524	5,61,340
North-Western Provinces and Oudh	6,93,644	7,70,370	7,79,200	5,77,644	7,85,211	8,33,077	4,25,257	11,70,901	19,39,114	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,229
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754	6,83,710	5,00,620	6,49,819	6,71,679
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367	6,61,779	7,25,335	6,61,326	6,83,910	8,52,862	10,06,723	8,50,139
British Burma	9,36,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468	16,03,023	11,37,562	11,80,190	15 16,613
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079	58,012	1,07,457	75,929	1,01,015	52,020	1,01,786	87,857
Ajmere	...	...	...	...	...	...	...	...	24	508	203	410	905	3,002	1,241	1,861	1,124
Assam	...	...	...	...	...	...	...	...	...	62,726	64,749	1,07,302	81,568	1,34,326	1,61,779	1,64,336	1,68,997
Surveys	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	38	272
Total ...	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151	42,43,710	50,87,896	43,43,022	48,38,322	42,48,926	45,94,243	48,00,250
Madras	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,39,762	4,18,882	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312	4,04,164	3,83,694	3,65,750	5,01,839
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,88,090	12,23,995	12,48,672	12,26,658	12,61,529	11,81,893	15,24,712	15,22,807
Total Revenue (British India)	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435	58,32,031	67,62,927	59,84,992	65,04,015	58,14,513	64,84,705	68,24,896
Hyderabad Assigned Districts ...	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,59,861	2,63,256	2,60,674	2,32,817	2,53,136	2,79,231	2,85,670	3,07,501	2,66,556
Biluchistan „ „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376
GRAND TOTAL OF REVENUE	35,01,488	35,75,454	30,87,757	33,69,330	42,85,293	47,26,434	48,30,130	50,82,243	59,60,581	65,07,691	60,92,705	69,95,744	62,38,128	67,83,246	61,00,183	67,92,206	71,05,828

STATEMENT II—*continued.*

EXPENDITURE.

A.—On Conservancy and Works.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172	1,46,857	2,10,914	1,50,295	1,89,619
North-Western Provinces and Oudh.	3,82,780	2,45,158	2,66,187	2,74,818	3,69,869	3,59,149	5,94,829	8,95,931	9,54,515	9,72,991	8,75,039	5,40,335	6,50,002	5,09,798	5,72,085	4,63,591	4,15,418
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,003	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330	2,58,949	2,58,952	2,20,827	2,25,277
Central Provinces	35,610	88,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010	1,78,513	2,40,523	1,67,334	1,78,401	2,36,029	3,58,380	3,40,386
British Burma ...	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,064	6,40,062	5,00,783	5,29,692	4,77,866
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493	16,453	14,671	30,542	29,956
Ajmere	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433	6,961	5,182	5,280	4,755
Assam	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005	48,954	64,519	72,157	69,209
Surveys	...	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684	10,024	10,663	8,655	7,700
Total ...	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517	18,16,459	18,73,798	18,39,419	17,60,186
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943	1,59,867	1,24,406	1,63,367	1,32,206
Bombay and Sind	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394	5,36,477	6,37,117	6,59,701	6,93,935
Total (British India) ...	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854	25,12,803	26,35,321	26,62,487	25,86,327
Hyderabad Assigned Districts ...	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506	49,715	39,544	42,352	57,356
Biluchistan „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,015
GRAND TOTAL ...	11,76,804	14,22,581	13,39,017	14,31,987	17,02,704	21,73,408	27,35,075	23,93,992	26,80,618	25,51,534	29,07,757	26,68,434	28,45,360	25,62,518	26,74,865	27,04,839	26,49,698

STATEMENT II—*continued.*

B.—On Establishments.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517	1,14,354	1,27,757	1,25,453	1,45,762
North-Western Provinces and Oudh	92,893	1,06,125	1,05,282	1,08,204	1,31,090	1,69,531	1,81,047	2,01,020	2,07,917	1,92,949	1,85,663	1,95,994	2,10,247	2,18,427	2,37,892	2,53,003	2,64,156
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153	2,58,217	2,64,602	2,59,849	2,70,091
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546	1,15,726	1,30,240	1,21,306	1,39,277	1,57,686	1,64,193	1,55,127
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,82,980	2,15,754	2,17,618	2,23,798	2,34,702
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708	14,226	11,688	14,836	19,814	20,158	24,622	26,531
Ajmere	...	...	...	...	...	...	...	...	8,177	8,563	8,813	14,383	11,025	7,965	8,263	8,470	7,668
Assam	...	...	...	...	...	...	...	...	...	31,721	28,385	28,697	47,915	51,333	61,508	60,673	73,516
Surveys	...	...	...	...	...	...	...	...	12,875	42,852	57,614	53,859	49,820	49,684	49,662	38,222	32,635
Total of Establishment Charges ...	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799	10,74,825	11,45,146	11,58,283	12,10,188
TOTAL OF ALL CHARGES ...	11,00,838	10,97,346	11,55,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316	28,91,284	30,18,944	29,97,702	29,70,374
Madras	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,138	2,19,027	2,22,626	2,17,398	2,17,861	2,19,798
Bombay and Sind	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548	3,20,467	3,62,044	3,96,612	4,21,161
Total of Establishment Charges (British India).	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374	16,17,918	17,24,588	17,72,756	18,51,147
TOTAL OF ALL CHARGES (BRITISH INDIA).	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,09,616	43,37,228	41,30,721	43,59,909	44,35,243	44,37,474
Hyderabad Assigned Districts ...	478	8,991	13,718	16,157	27,553	58,692	38,938	38,071	37,994	41,523	45,875	48,586	54,146	60,253	67,806	68,162	71,613
Biluchistan ,, ,, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,401
GRAND TOTAL OF ESTABLISHMENT CHARGES.	6,42,520	7,12,392	6,95,166	7,98,704	8,98,859	10,05,787	10,93,580	11,89,039	12,99,375	13,59,447	13,46,694	14,32,055	15,86,520	16,78,171	17,92,394	18,40,918	19,33,161
GRAND TOTAL OF ALL CHARGES.	18,19,324	21,34,973	20,34,183	22,30,691	26,01,563	31,79,195	38,28,655	35,83,031	39,79,993	39,10,981	42,54,451	41,00,489	44,31,880	42,40,689	44,67,259	45,45,757	45,82,859

STATEMENT II—*concluded.*

SURPLUS REVENUE.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay.	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531	12,94,640	22,86,840	12,51,706	19,47,038	12,29,982	15,96,541	18,29,876
The Presidency of Madras ...	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010	(Deficit 33,546)	(Deficit 3,724)	1,342	21,671	41,890	(Deficit 15,478)	1,49,835
,, of Bombay ...	5,42,159	2,32,556	1,73,825	3,37,108	5,83,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716	4,04,585	1,82,732	4,68,399	4,07,711
TOTAL NET REVENUE (BRITISH INDIA).	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094	16,68,969	27,53,311	16,47,764	23,73,294	14,54,604	20,49,462	23,87,422
Hyderabad Assigned Districts ...	1,890	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616	1,69,285	1,41,944	1,58,484	1,69,263	1,78,320	1,96,987	1,37,587
Biluchistan ,, ,, ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	(Deficit 2,040)
GRAND TOTAL OF NET REVENUE.	16,82,164	14,40,481	10,53,574	11,38,639	16,83,730	15,47,239	10,01,475	14,99,212	19,80,588	25,96,710	18,38,254	28,95,255	18,06,248	25,42,557	16,32,924	22,46,449	25,22,969

Govt. Central Branch Press, Simla.—No. 279 H. D.—28-7-82.—350.

REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

FOR THE YEAR

1881-82:

BY

W. SCHLICH, PH. D.,

INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

Dated the 15th May 1883.

CALCUTTA:

PRINTED AT THE HOME DEPARTMENT PRESS.

1883.

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A

REVIEW OF THE FOREST ADMINISTRATION

IN THE

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CHAPTER I.—INTRODUCTION.

1. RETIREMENT OF MR. BRANDIS.

THE most important event in Indian Forest Administration during the year 1881-82 was the retirement of Mr. D. Brandis from the office of Inspector General of Forests, consequent on his deputation on special duty to the Madras Presidency. Mr. Brandis made over charge of his office on the 15th October 1881; he remained in Madras until January 1883, when he proceeded on three months' privilege leave, at the end of which period he joined at the India Office in London, in order to assist in the re-organization of the arrangements for the education of the candidates for the Indian Forest Department; and since then he has finally retired from the Service.

2. Mr. Brandis was appointed Superintendent of Forests in Pegu, British Burma, in January 1856, and in 1857 the forests of Tenasserim and Martaban were added to his charge. In December 1862 he was placed on special duty under the Government of India to assist in organizing Forest Administration in other provinces; and on the 1st April 1864 he was appointed the first Inspector General of Forests to the Government of India. This appointment he has held for the long period of 19 years.

3. While holding the appointment of Superintendent of Forests in British Burma, Mr. Brandis thoroughly explored the teak forests of that province, and put their administration on a satisfactory footing. It was due principally to his determination, under great difficulties, that these valuable estates, which yield now an annual revenue of 22 lakhs of rupees, were saved to Government. Since his transfer to the Government of India in 1862, he has incessantly laboured to perfect the organization of the Department in the various provinces under the Government of India—a task to the performance of which he brought, not only a thorough command of details and an accurate knowledge of the requirements of Forest Administration, but a remarkable faculty of adapting means to ends, and of varying his suggestions to suit the circumstances of different parts of India. His numerous Inspection Reports and Reviews show at what a cost of personal exertion and self-sacrifice he mastered the conditions of Forest Conservancy in all parts of India; and his directions and instructions will for many years form the standard manuals for the guidance of those who may come after him.

4. Services similar to those which he has rendered to the Government of India have been given by him to the cause of Forestry in the minor presidencies also. In 1869 he was deputed to Bombay, and the organization of the Department in that presidency, which has worked remarkably well, is based on the proposals made by him. Mr. Brandis' deputation to the Madras Presidency, in October 1881, to confer with the Local Government on the whole subject of Forest Conservancy and Forest Legislation, entailed on him an amount of hard work and exposure which few men of his age would have cared to face, and which only his enthusiastic devotion to his profession would have induced him to undergo. The result of his mission to Madras has been to place the establishment of Forest Administration in that presidency on a sound footing, and his services have been acknowledged in the warmest terms by His Excellency the Governor in Council.

5. All legislation which has taken place on the subject of Forests in India has been carried through on Mr. Brandis' advice and with his assistance. In 1865 the first Indian Forest Act was passed, which defined the legal position of Government forests and provided for their protection and better management. This Act was amended in 1878, when the present Indian Forest Law, Act VII of 1878, came into force. The latter Act has been extended to the Provinces under the Government of India and to Bombay, but not to British Burma. In 1881 a special Act for Burma was passed, and in 1882 the Madras Forest Act received the assent of His Excellency the Governor General in Council.

6. Scarcely recovered from a severe illness, contracted in the performance of his arduous duties in India, Mr. Brandis was employed in England for about 18 months from October 1872 in continuing and completing an account of the Forest Flora of North-West and Central India—a work of the highest literary excellence, and which is of the greatest use, not only to Forest Officers in those parts of India, but also to Indian Botanists. He was also instrumental in causing the preparation and publication of several other works of the highest importance to Forest Officers. Amongst these are the "Forest Flora of British Burma," by S. Kurz; the "Manual of Indian Timbers," by J. S. Gamble; the "Manual of the Land Revenue Systems and Land Tenures of British India," by B. H. Baden-Powell; and the "Manual of Jurisprudence for Forest Officers," also by B. H. Baden-Powell.

7. Throughout his service Mr. Brandis has laboured to create a competent and efficient staff of superior and subordinate officers. The Science of Forestry, in its true meaning, being little known in this country when conservancy measures were first introduced, Mr. Brandis arranged, while in England in 1866, under the orders of Her Majesty's Government, for the professional education of the candidates selected for the Indian Forest Service. The measures then inaugurated by him have secured to India a staff of trained Forest Officers, to whose exertions the rapid development of the operations of the Department is in a large measure due.

8. Having thus provided for the recruiting of the superior staff, Mr. Brandis set to work on the establishment of an Indian Forest School, in which a competent staff of Rangers or Executive Officers could be trained. He submitted his scheme for such a School at Dehra Dun to the Government of India in 1877, and in the following year the School was opened. Some time elapsed of course before the institution could be brought into proper working order, but this has now been accomplished, and it is expected that, after the lapse of another year or two, thirty trained Rangers will leave the School annually.

9. Mr. Brandis has thus, during a period of twenty-seven years, been at work in building up a new branch of the public service. The difficulties in his way were very great, and it may be said, without exaggeration, that throughout this long period there has not been a day on which, if not actually incapacitated by illness, he has not been labouring in the cause of Forest Conservancy in this country. Apart from the important advantages which have thus been

secured to India, owing to the influence which well-preserved forests exercise on the climatic conditions of the country and the economic well-being of the people, Mr. Brandis' exertions have been accompanied by a substantial pecuniary benefit to the Government of India, the revenue from the Government forests, which amounted to 35 lakhs of rupees in 1864, having now risen to 95 lakhs of rupees.

10. Mr. Brandis' services have been acknowledged by the Government of India in the warmest terms. The *Gazette of India* of the 5th May 1883 contained the following Notification, dated the 1st idem :—

> His Excellency the Governor General in Council desires to place upon public record his recognition of the eminent services rendered to the State by Mr. D. Brandis, PH.D., C.I.E., Inspector General of Forests to the Government of India, who has left India with the intention of retiring from the service of Government.
>
> Mr. Brandis has served in the Forest Department since January 1856, and has for the last nineteen years been Inspector General of Forests to the Government of India. During this long period he has laboured incessantly and successfully to perfect the organisation and working of the Department in all parts of the country, and under his able administration the Forest revenues have risen from 35 to 95 lakhs of rupees. The directions and instructions embodied in his numerous Inspection Reports and Reviews will, for many years to come, form the standard manuals for the practical guidance of Forest Officers. It is hoped that after his retirement Mr. Brandis will supplement the services he has rendered to the cause of Forest education in this country by assisting the Government at home to place the training of candidates for the superior staff of the Department upon a sound and permanent basis. The warmest thanks of the Government of India are due, and are hereby tendered, to Mr. Brandis.

2. RE-ORGANIZATION OF THE SUPERIOR STAFF.

11. During the year 1881-82 a re-organization of the superior staff of the Department has been worked out, and, although it did not come into force until the 3rd September 1882, it will be useful to indicate here the general lines of the new organization.

Apart from the appointment of Inspector General of Forests to the Government of India, the following staff has now been sanctioned :—

		Per mensem. Rs.
3	Conservators of Forests, 1st grade, on	1,500 each.
3	,, ,, 2nd ,, ,, ...	1,250 ,,
4	,, ,, 3rd ,, ,, ...	1,000 ,,
9	Deputy Conservators of Forests, 1st grade, on ...	900 ,,
9	,, ,, 2nd ,, ,, ...	800 ,,
17	,, ,, 3rd ,, ,, ...	650 ,,
17	,, ,, 4th ,, ,, ...	550 ,,
17	Assistant Conservators of Forests, 1st ,, ,, ...	450 ,,
17	,, ,, 2nd & 3rd grades, on ...	350 & 250 each, respectively.

		Per mensem. Rs.		Rs.
1	Deputy Director of the Forest School, rising by annual increments of Rs. 40 from ...	700	to	900
1	Professor of Physical Sciences at the Forest School, rising by annual increments of Rs. 40 from ...	600	to	800
1	Deputy Superintendent of Forest Surveys, rising by annual increments of Rs. 40 from ...	600	to	800
1	Superintendent of Working-Plans, rising by annual increments of Rs. 40 from ...	600	to	800
	Allowance to the Director of the Forest School ...			200

or a total of 100 Officers arranged in the following classes :—

Conservators	10
Deputy Conservators, including Special Appointments	56
Assistant Conservators	34
Total ...	100

12. This staff has been arranged in five lists, namely—

(1) Bengal—Assam.

(2) North-Western Provinces and Oudh.

(3) Punjab.

(4) Central Provinces—Berar.

(5) British Burma.

In addition there are six Special Appointments, which it was not considered necessary to include in any local list. The allotment of the entire staff is as follows :—

Provinces.	Conservators.	Deputy Conservators.				Assistant Conservators.			Grand Total.
		1st and 2nd grades.	3rd grade.	4th grade.	Total.	1st grade.	2nd and 3rd grades.	Total.	
1. Bengal—Assam ...	2	3	4	3	10	3	4	7	19
2. North-Western Provinces and Oudh	3	3	3	4	10	4	3	7	20
3. Punjab	1	3	3	4	10	4	3	7	18
4. Central Provinces—Berar ...	2	3	4	3	10	3	4	7	19
5. British Burma	2	4	3	3	10	3	3	6	18
Special Appointments.									
Deputy Director of the Forest School ...	...	1	...	...	1	...	...	...	1
Professor of Physical Sciences at the Forest School.	...	...	1	...	1	...	...	...	1
Deputy Superintendent of Forest Surveys	...	...	1	...	1	...	...	...	1
Superintendent of Working-Plans ...	...	...	1	...	1	...	...	...	1
Officer in charge of the Coorg Forests ...	...	1	...	...	1	...	...	...	1
Assistant Comptroller General (or Assistant to the Inspector General of Forests)	...	1	...	...	1	...	...	...	1
Total ...	10	19	20	17	56	17	17	34	100

One officer of the North-Western Provinces and Oudh List will be attached to the Forest Survey Branch, and one officer of the British Burma List will be stationed in the Andamans.

13. The Rules regulating the appointment and promotion of Officers of the Forest Department will be found amongst the Appendices to this Review. First appointments to the superior staff are made by the Government of India; subsequent promotions up to and including Deputy Conservators of the 2nd grade are made by Local Governments. Promotion to the 1st grade of Deputy Conservators is, owing to their small number, given by the Government of India, who also appoint and promote all Conservators of Forests and the incumbents of the six Special Appointments.

The Superintendent of Forest Surveys and the Superintendent of Working-Plans are directly subordinate to the Inspector General of Forests. The Forest Survey Branch has been in full working order for some years past, but the Working-Plan Branch has yet to be developed.

3. Subordinate Staff.

14. The subordinate staff varies considerably according to the local requirements of the different provinces. With one or two exceptions, it has, however, now been recognized in all provinces that the most important measure of the immediate future is the creation of a staff of competent Forest Rangers, who, with the Sub-Assistant Conservators, will be the real executive officers of the Department. Hitherto the members of the superior staff had either to attend to the executive work, or to entrust it to a staff of low-paid and ill-educated Foresters. The former arrangement is too expensive, and the latter is even more objectionable, because the class of Foresters hitherto employed is not fitted

for the work on account of their imperfect knowledge and a want of trustworthiness in many instances.

In order to put forest management on a lastingly satisfactory footing, it is necessary to divide each of the hitherto very extensive Forest Divisions into a suitable number of Ranges of reasonable extent, each to be administered by a Forest Ranger or a Sub-Assistant Conservator.

4. Dehra Dun Forest School.

15. It has already been stated in last year's Review that the first course of theoretical instruction was held in the summer of 1881. The second course was similarly held from the 1st July to the end of October 1882, thirty-three students having taken part in it. Arrangements have now been made to receive annually thirty new students at the School, and it is hoped that in this manner a sufficient staff of Rangers will be trained within a reasonable period.

16. The conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School will be found amongst the Appendices to this Review. The main points are that only men who have passed the entrance examination of an Indian University on the English side shall be admitted, and that they must have served for at least one year as Foresters before they join the School. In this manner a sufficient standard of education is ensured, while candidates have proved their fitness for forest work before they are permitted to attend the School. The students join on the 1st July and attend the lectures from that date until the 31st October; they are then employed on practical work from the 1st November to the 1st July following, either on ordinary executive work, or with the Working-Plan Branch. From the 1st July to the 31st October of the second year they attend a second course of lectures, and they can earn the Ranger's certificate at the end of 16 months. Students who do not come up to the required standard at the end of 16 months may, at the discretion of the Director of the School, be either relegated to their provinces without the Ranger's certificate, or retained for an additional year.

17. The instruction given during the theoretical courses may be seen from the following abstract :—

(1)—Forestry.

(a)—First year's course :—Objects and importance of Sylviculture. Structure, functions, and chemical composition of Plants. Climate. Soils.

(b)—Second year's course :—The struggle for existence. Classification of Indian Forests. Creation and regeneration of Forests.

Hereafter, it is hoped, some instruction in Working-Plans and Forest-Utilization will be added.

(2)—Botany.

(a)—First year's course :—Elements of structural and physiological Botany.

(b)—Second year's course :—Classification. Natural orders of the more important Indian Plants.

There are also weekly excursions and microscopic demonstrations.

(3)—Physical Science.

(a)—First year's course :—The principal subjects of *Physics* treated are :—Endosmose, gravity, specific gravity, transmission of sound, heat, the atmospheric air and its pressure, evaporation of water, the properties of light. Some instruction is also given regarding lenses, microscopes, telescopes, the magnetic needle,

the galvanic battery, and also regarding the various applications of electricity for purposes of signalling and the transmission of power.

In *Chemistry* the instruction extends to the more important gaseous and other elements and compounds required to understand the phenomena of vegetable life, and the action of soil, water, and air. Metals and their compounds, with reference to the nourishment of plants, and the components of soils and of the ashes of plants. Some idea is also given of the general constitution of organic compounds.

(b)—Second year's course :—Mineralogy, especially the most common and important minerals. The most important forms of crystallization; hardness, cleavage, chemical composition. Use of the blow-pipe.

Geology.—The different kinds of rocks, with special reference to composition and age. The Indian formations.

Chemical Practice.—The common re-actions of inorganic analysis. Analysis of various minerals and soils. Analysis of the ashes of woods, partly qualitative and partly quantitative.

(4)—Law.

Special Forest Law.

(5)—Mathematics.

Arithmetic, Geometry, Mensuration.

Surveying.—Up to the Lower Standard, comprising surveying with the chain, prismatic compass and chain, planetable and chain; levelling.

(6)—Entomology.

A general introduction into the subject and the more important natural orders.

18. Hitherto the want of a Manual of Sylviculture has been much felt, but good progress in the preparation of one has now been made, and it is expected that it will be roughly in print by the end of the current year. Mr. Baden-Powell's excellent Manuals on "Jurisprudence for Forest Officers" and "The Land Revenue Systems and Land Tenures of British India" have now been published, and they will be of the greatest use to all Forest Officers, as well as to others.

5. Fuel and Fodder Reserves.

19. Since the publication of the last Review, the question of the establishment of Fuel and Fodder Reserves has been further advanced by the Revenue and Agricultural Department of the Government of India, in consultation with the Forest Department. A Circular Resolution, No. 16A. of the 1st March 1883, has been issued by that Department, in which the attention of the Local Governments of Upper India [Punjab, North-Western Provinces and Oudh, Central Provinces, Berar] is drawn to the growing decrease in the area of grazing lands and wooded tracts in many parts of Upper India, as well as to their deterioration in quality and their change in character, the latter being partly due to the excessive grazing which the reduction in area has made necessary. It is pointed out that apparently at present the agricultural population will not, or cannot, themselves take sufficient precautions to provide against exceptional occurrences, and that they trust to accident or to assistance from Government. But, in a matter like this, little or no help can be afforded unless systematic arrangements are made in advance, and continuously maintained, under which a supply of fodder in a year of drought may be secured. The general outlines of the scheme which commends itself to the Government of India as most likely to secure the desired results, and which from

enquiries made appears likely to meet with the most general acceptation, are described as follow in the Resolution quoted above :—

The general control and administration of the measures with which this Resolution is concerned should, in the opinion of the Government of India, be primarily in the hands of the local officers, viz., the Commissioner, the District Officer, and his subordinates in charge of sub-divisions. The official channel through which the Local Government would communicate with the divisional and district officers would be the Agricultural Department, which would be responsible for providing the Government with advice and information, and for maintaining continuous action. The actual management of the lands set apart for the supply of fodder and fuel would be placed in the hands of Forest officials, who alone can be expected to establish and maintain without interruption a scientific system of treatment.

In order to satisfy the above conditions, it would be necessary, in each district or division in which operations are likely to be sufficiently extensive to require scientific management, that an officer of the Forest Department should, when financial circumstances admit of this being done, be placed under the orders of the district or divisional officer. He would work entirely under the orders of the Civil Officer, who would, however, refer questions of a professional or technical character for the advice of the chief Forest Officer of the Province or Circle. In many districts the necessary staff exists already, but in others new posts will have to be created.

It must not, however, be expected that arrangements can be made, financially or otherwise, under which every district or division can, in every part of the Upper Provinces in which the measure would be useful, be supplied with a separate Forest Officer for the work contemplated. It would, indeed, be extremely unwise to enter upon any expensive organisation until much more experience and information have been acquired. It is only, therefore, for those regions in which grazing lands are disappearing at a rapid rate, or in which history has shown that drought causes extensive destruction of cattle, that any application for the services of special officials could at present be entertained. It will probably be considered sufficient if at first a Forest official is attached as assistant to the Commissioner in one or two of the divisions in each province in which protection is most required.

In the meanwhile the serious duty will devolve upon the district officers of ascertaining how far the cattle need protection, and the extent of land, whether the property of Government or purchasable from land-owners at a reasonable price, which can be made available for fuel and fodder reserves. For this purpose an analysis of every district should be made by the local officials, which will show its need for protection against drought, and the extent to which land is available for fuel and fodder reserves. They may also be directed to enquire how land can be most advantageously secured for the required purposes in districts where a sufficient quantity of Government land is not available, how far the landholders themselves or Local Boards will be able to co-operate with the Government in the matter, and at what cost suitable areas can be procured.

The Agricultural Department will probably at present be most usefully employed in ascertaining by actual experiment, and in consultation with the Forest Department, what are the best means of bringing waste lands into a condition in which they can most economically provide a supply of fodder in a year of drought, and in what way they can in ordinary years be most profitably employed. The Department would also superintend, in correspondence with Commissioners, the analysis required by the preceding paragraph, and would review for the Local Governments the reports received from each Division. The same Department may also ascertain whether any system of stacking hay or storing fodder can be established, or whether it may not be useful to close grazing reserves for a portion of the year, especially when other fodder, such as the stubble of newly-reaped crops, is available. For if grass reserves are only thrown open when no other food is available, the grass will have the requisite opportunity to make head, and will thus provide a much more ample supply of fodder than if exposed continually to desultory grazing. Enquiries of this kind will fall within the scope of the Agricultural Department.

This Resolution is not the place in which the treatment of land required for conversion into fuel and fodder reserves can be considered in any detail. But the opportunity may be taken to give expression to the opinion of the Government of India that little real good can be effected unless the reserves are, at any rate for some years, brought under the control of Government, and systematically protected against the invasion of goats, cattle, and fire. It appears to be a matter susceptible of proof that a protected area will, besides giving security in a year of drought, afford over a certain number of years a considerably larger amount of fodder than an unprotected area of equal extent. It seems probable that the difference is sufficiently great to admit of a hope that fuel and fodder reserves can, in a large number of instances, be made financially successful.

The Resolution concludes as follows :—

If the conclusions indicated by the facts and arguments adduced in the preceding paragraphs can be accepted, the objection which has not unfrequently been brought forward to the occupation of grazing lands, on the score of the inconvenience suffered by the adjacent population in being deprived of their cattle pasture, is greatly diminished. The occupation is

only temporary. The inconvenience which is temporarily occasioned to the agricultural population is due to their own action in diminishing the efficiency of their grazing lands by an improper use of them. The Government proposes to do no more than restore, and, if possible, to increase, the efficiency which has been lost. The measure contemplated will, it is believed, result in a future supply of fodder which will be far larger and far more certain than that of which the owners of the cattle have been deprived. In this view it may be even found desirable to attach, for conversion into fuel and fodder reserves, land which has been broken up under the plough, but which as fodder reserves would be more profitable in preserving cattle from starvation, than in growing crops which are subject to failure in a year of drought.

6. Forest Law.

20. In continuation of the Indian Forest Act of 1878, special Acts for Burma and Madras have now been passed. In both instances the provisions of Chapter IV of the Indian Act, dealing with "Protected Forests," have been considerably altered. While the Indian Act admits two classes of demarcated forests (besides village forests)—namely, reserved forests and protected forests—both the Burma and Madras Acts recognize only one class of demarcated forest estates—namely, reserved forests—in which all rights have been duly inquired into, settled, and regulated, while the springing-up of new rights is made impossible. For the rest of the Government forests, provision is made to regulate their use, but no attempt is made to fix or settle rights. It will probably be necessary to recast Chapter IV of the Indian Act at no distant date, in order to prevent mischief, which may be caused by proceeding under it in order to avoid the more detailed provisions which have purposely been introduced by the Legislature into Chapter II, so as to provide not only for the thorough protection and management of the permanent Government forest estates, but also for the protection of the right-holders, who must be dealt with fairly and equitably by proceeding under Chapter II.

CHAPTER II.—AREA AND BOUNDARIES.

General.

21. The areas of the Government Forests with which the Forest Department is concerned stood as follow on the 1st April 1882 :—

Province.	Area, in square miles.				Remarks.
	Reserved.	Protected.	Unreserved.	Total.	
Bengal	4,236	2,325	5,108	11,669	
North-Western Provinces and Oudh ...	3,326	98	85	3,509	
Punjab	1,160	311	3,323	4,794	
Central Provinces	19,430*	...	289	19,719	* 2,588 are first class, the rest are second class reserves.
British Burma	3,274	...	...	3,274	
Coorg	234	...	...	234	
Ajmere	122	...	...	122	
Assam	2,066	659	5,286	8,011	
	33,848	3,393	14,091	51,332	
Berar	1,394	...	3,030	4,424	
Biluchistan	...	...	26	26	
Total ...	35,242	3,393	17,147	55,782	
Madras	1,182	...	...	1,182	
Bombay	9,789	5,219	...	15,008	
Grand Total ...	46,213	8,612	17,147	71,972	

The area of Unreserved Forests has not been given in all instances, but it is hoped that the missing information will be supplied in future Reports.

22. The area of reserved forests in the Provinces under the Government of India has increased as shown below, since the passing of the Indian Forest Act in 1878:—

	Square miles.
Area on the 1st April 1878	17,671
„ „ 1879	31,602
„ „ 1880	31,785
„ „ 1881	33,141
„ „ 1882	35,242

The increase during the last year amounted to 2,101 square miles, which took place in the following provinces:—

Province.	Area of reserved forests, in square miles.	
	Increase during 1881-82.	Total on the 1st April 1882.
Bengal	825	4,236
North-Western Provinces and Oudh	13	3,326
Punjab	217	1,160
Central Provinces	.....	19,430
British Burma	986	3,274
Coorg	1	234
Ajmere	.....	122
Assam	51	2,066
Total ...	2,093	33,848
Berar	8	1,394
Grand Total ...	2,101	35,242

According to the law under which these areas have been reserved, they may be classified as follow:—

	Square miles.
Under the Indian Forest Act, 1878	29,580
Ditto Forest Act of 1865 and Act VII. of 1869	3,508
Ditto Local Rules, Hazara	236
Ditto ditto Ajmere	122
Ditto ditto Berar	1,394
Ditto Leases	402
Total ...	35,242

The above data do not agree with those given in previous Reviews, because the latter included only the first class reserves in the Central Provinces. In these provinces an area of 19,430 square miles was declared reserved forests in 1879 under Chapter II. of the Indian Forest Act of 1878; but as only part of this area is subjected to the intense management usually adopted in the case of reserves, it was divided into first and second class reserves. Only the former were entered in the statement of reserves; but as no difference exists between the two classes, as far as their legal status is concerned, the total area has now been entered, and the figures for past years have been corrected accordingly.

Bengal.

23. The progress of reservation in Bengal has been very rapid, as may be seen from the following data:—

	Square miles.
Area of reserved forests on the 1st April 1873	106
Ditto 1874	120
Ditto 1875	1,467
Ditto 1876	2,585
Ditto 1877	3,390
Ditto 1878	3,430
Ditto 1879	2,967
Ditto 1880	2,945
Ditto 1881	3,411
Ditto 1882	4,236

Eleven additional forests have been gazetted under section 4 of the Indian Forest Act, but their area is not known. It is expected that the work of reservation will be completed at an early date. The demarcation of the reserves has been completed in most divisions. No change has taken place in the area of protected forests, which remains at 2,325 square miles.

The examination of private forests in Chota Nagpore has been continued, with the view of bringing them under conservancy, but no definite proposals have yet been made. It will be interesting to follow this attempt to extend the benefits of systematic conservancy to the extensive private forest estates in that province.

North-Western Provinces and Oudh.

24. The areas have remained almost stationary, but considerable tracts are available for further extension of the Government forest areas under systematic management. In Banda 85 square miles have been taken up, and it is intended to increase this area to 120 square miles. The reservation of additional tracts in Gonda and Gorakhpur seems to be still pending, while much remains to be done in Tehri-Garhwal and in Bashahr.

The state of the boundaries has received attention during the year, but some demarcation remains to be done.

Punjab.

25. The work connected with reservation has been somewhat more satisfactory than in the previous year. 217 square miles have been added to the reserves, and the settlement of 320 square miles is reported as complete, while that of 380 square miles was in progress at the close of the year. On the whole, the area of reserves amounted only to 1,160 square miles, which is only a fraction of what is required for the welfare of the people and the requirements of the State.

26. No change has taken place in the area of the protected forests, which remains at 311 square miles. Some misapprehension still exists in the Punjab in regard to the object of protected forests, and there is a tendency of declaring areas which are permanently required for forests "protected" under Chapter IV of the Forest Act, instead of "reserves" under Chapter II. There can be no doubt that all areas permanently required as forests should be constituted reserves, and that only such areas should be gazetted under Chapter IV of the Act as protected forests regarding which it is as yet doubtful whether they will be wanted ultimately for the production of forest produce, but which require nevertheless a certain amount of protection in the meantime. Chapter IV does not make all the necessary provisions for the proper management of the permanent forest estates; and when once a detailed enquiry has been made into rights and other circumstances, it should be decided at once what areas shall be declared reserves, and what parts can be made available for cultivation or other purposes. No useful object can be gained by letting such lands pass through an intermediate stage as protected forests, thereby offering facilities for the acquisition of fresh rights. On the other hand, Chapter II of the Indian Forest Act has been so framed that Local Governments can make the protection of reserves as stringent or as lenient as may be required in each instance.

Central Provinces.

27. In the Central Provinces circumstances were favourable for the formation of reserves, as the areas at the disposal of Government had been declared free of rights at settlement. When the Forest Act had been passed in 1878, it was decided to declare all Government waste lands in the province reserved forests under Chapter II of the Act. Thus an area of 19,430 square miles was set aside permanently for forests. Having put the estates

on a satisfactory legal basis, arrangements were made to secure their greatest usefulness both to the people and the State. Certain areas, called first class reserves, which amount now to 2,588 square miles, were selected for more intense management, while the rest, called second class reserves, were set aside, under certain restrictions, for the supply of the ordinary requirements of the people. Gradually additional areas will be brought under more systematic management, while the effects of protection have been so marked that some of the first class reserves yield already large quantities of produce.

As regards the boundaries, much remains to be done, but it should be remembered that the area of the reserves is very considerable. A great effort has been made of late to expedite the work of demarcation.

British Burma.

28. The demarcation and settlement of reserves has again been pushed on most vigorously, an area of 986 square miles having been added to the previous reserves during the year. The progress during the last five years will be seen from the following data:—

		Square miles.
Area on the 1st April	1878	650
Do.	1879	1,410
Do.	1880	1,612
Do.	1881	2,288
Do.	1882	3,274

Of the total reserved area, 398 square miles are toungya areas—that is to say tracts in which, though forming part of the reserves, the people (Karens) are permitted to carry on toungya (temporary) cultivation. These blocks are all properly demarcated, and the arrangement has this great advantage that reservation keeps the indigenous people on the ground. The work has been done in a thorough manner, and the results are very satisfactory. On this subject the Chief Commissioner writes as follows:—

> Great pains have been taken by the officers employed on forest demarcation to ascertain and sift the claims of the neighbouring inhabitants in respect of the forests proposed for reservation, and the claims put forward have been dealt with liberally and indulgently. Wherever the removal of villages from forest land has been found necessary, and such cases have been but few, the utmost consideration has been shown for the convenience of the people in fixing the time for moving, and compensation has been made on a generous scale for the trouble involved in shifting their dwellings. In many instances, the formation of a reserve is a direct benefit to the people, particularly Karens, living near it, who thereby obtain remunerative employment from the Forest Department. The Karens as a body no doubt dislike forest reservation, not because it brings them distinct hardships, but because it puts restraints on the boundless license they have been wont to enjoy.

And the Conservator of Forests of the Pegu Circle writes as follows:—

> The Karens themselves say that once they were like jungle-fowls, hiding where they liked, scratching the earth here and there, and putting in a grain of rice and eating what came of it, if the nats (spirits) permitted; but that now the Forest Department put them into boundaries here and boundaries there, and that they feel like pigs in a pen. But after a certain time has elapsed they rarely deny that their latter state is preferable to their former, more especially in or near fire-traced reserves, where work is constantly obtainable. With the careful way in which enquiries are made, and privileges and rights granted, we have a right to expect such favourable results.

29. In this manner the most valuable forests in India, the Teak Forests of Burma, are at last being secured as permanent forest estates, without pressing upon the indigenous people of the country. The struggle has, however, been very prolonged, and successive Conservators have taken a share in it. It was commenced as early as 1856 by Mr. Brandis, supported by Colonel (now Sir Arthur) Phayre, and the obstacles in the way have only quite lately been overcome.

The work in the Pegu Circle is now far advanced, and its conclusion may be expected at an early date. In the Tenasserim Circle much more remains to be done, but here also no time is being lost in pushing on the work.

Ajmere.

30. The area taken under management as reserves has not been increased during the year, but enquiries have been set on foot with a view to secure an extension of the areas under forest conservancy at the time of the next settlement, which will be commenced in 1884. Experience has already shown the great benefits which Forest Conservancy is likely to bestow upon Ajmere and Merwara, and it is essential that the forest area should be increased until it is capable of yielding all the forest produce and the grazing required by the people, not only in ordinary years, but also in times of scarcity; in particular, it will be necessary to secure a sufficient area to provide fodder for cattle, as a safeguard against their being reduced by starvation and disease in years of drought, or to prevent the necessity of their being driven to other districts in such years.

Assam.

31. An area of 51 square miles was added to the reserves during the year, and it is reported that the reservation of several additional forests is in contemplation; it is satisfactory to notice that most of these forests are situated in districts which have as yet a small area of reserves. On the whole, the forests of Assam are very unevenly distributed over the province, one-half of the total area being situated in one district, Lakhimpur, while in others, like Nowgong, Kamrup, and Sylhet, only very small areas are available. The following statement, showing the distribution of the Government forests, may prove interesting:—

Civil District.	Area of Government Forests, in square miles.		
	Within revenue limits.	Beyond revenue limits.	Total.
Goalpara	437	.....	437
Garo Hills	.....	351	351
Kamrup	129	.....	129
Nowgong	55	.....	55
Darrang	479	.....	479
Khasi and Jaintia Hills	50	100	150
Sibsagar	331	.....	331
Naga Hills	455	525	980
Lakhimpur	2,494	1,500	3,994
Sylhet	269	.....	269
Cachar	825	11	836
Total ...	5,524	2,487	8,011

Nearly one-third of the forests are at present beyond revenue limits, and consequently of little use; but, as civilization advances, these areas will no doubt become of value in the same degree as the private forests in the level and more accessible parts of the country disappear before the axe of the indigenous cultivator and of the tea planter.

Berar.

32. Of a total forest area of 4,424 square miles, 1,394 square miles have been definitely set aside as reserves. A re-classification of the remaining estates is now in progress, with the object of deciding what areas shall be maintained as forests, grass preserves, or grazing grounds, and what can be made available for the extension of cultivation. The areas permanently set aside for the production of wood, grass, and other forest produce have hitherto been classified as State Reserves, District Reserves, Rhamnas, Babul Bans, Grazing Grounds, &c. It will, however, be best to put all such lands on the same legal footing by

declaring them "reserves" under the proposed Forest Regulation, and to classify them according to their purposes in the rules to be passed under the Regulation. This plan would once for all put a limit on the further alienation of land and the acquisition of new rights, while any particular block may be set aside for the production of wood or grass, as may be required from time to time.

Biluchistan.

33. A commencement has been made to bring some lands in the vicinity of Sibi, measuring about 26 square miles, under forest conservancy. It is intended to extend operations considerably, especially with the view of securing a permanent supply of timber and fuel for the station of Quetta.

Leased Forests.

34. The area of leased forests, which is included under reserves, has been increased from 391 to 402 square miles.

The rent paid during the year, including payments to shareholders in forests managed by Government, is as follows :—

	Rs.
North-Western Provinces (Tehri-Garhwal)	13,498
Punjab (Bashahr, Chamba, Kalesar, Hazara, Kangra) ...	33,155
Berar (annual payment to Melghat Rajas)	17,120
Total ...	63,773

This amount compares as follows with those paid in the preceding four years :—

	Rs.
1877-78	62,814
1878-79	62,174
1879-80	61,931
1880-81	75,341
1881-82	63,773

Cost of Demarcation.

35. The cost of demarcation will be seen from the following data :—

Year.	Area of Reserves at the end of the year, in square miles.	Outlay on Demarcation, &c.
		Rs.
1877-78	17,671	38,389
1878-79	31,602	38,855
1879-80	31,785	45,299
1880-81	33,141	53,002
1881-82	35,242	50,490

As the culminating point in the addition of reserved areas is now past, the expenditure is likely to fall gradually, until it has reached the amount required to keep the boundaries clear and the boundary marks in repair.

Compensation for Land and Rights.

36. The following sums have been expended during the last five years on account of compensation for land and rights :—

	Rs.
1877-78	6,508
1878-79	64,704
1879-80	4,610
1880-81	17,333
1881-82	34,342

About two-thirds of the total amount have been expended in Bengal.

CHAPTER III.—SURVEYS AND WORKING-PLANS.

Surveys.

37. The Forest Survey Branch has during the year under review been employed in the continuation of the survey of the forests in the Central Circle of the North-Western Provinces; detached parties were employed in Berar and in the Tons, Dehra Dun, Saharanpur, and Jaunsar Divisions of the North-Western Provinces.

The area plane-tabled amounted to 239 square miles on the 4-inch scale and 26 square miles on the 2-inch scale, against 260 square miles on the 4-inch scale in 1880-81. The cost per square mile plane-tabled during the year, including office expenditure, is given as Rs. 104, while the corresponding figures for the work in Kumaun and Garhwal were Rs. 118 in 1880-81 and Rs. 111 in 1879-80. The total cost of the Kumaun and Garhwal Survey stands now at Rs. 116 per square mile.

38. The survey of the forests in the Central and School Circles of the North-Western Provinces draws now to a close, and the work turned out may safely be pronounced of excellent quality. It is probable that the Survey Branch will next be employed in Berar, on the survey of the Melghat forests.

In Burma it has been arranged to survey the reserves in connection with the general topographical survey which is now in progress in that province.

Working-Plans.

39. The Working-Plan Branch was during the year 1881-82 employed in the Naini Tal, Ranikhet, and Nandaur forests. The work extended over 34,371 acres, on which 1,550,304 trees were measured and classified. The description of blocks extended over 65,993 acres. Working-plans based on these data are now under preparation.

40. Hitherto this branch of the service was a provincial establishment. A Superintendent of Working-Plans has, however, now been sanctioned, and, beginning from the 1st April 1884, the branch will be Imperial. It is proposed to establish a central office, in connection with that of the Inspector General of Forests, where copies of all working-plans will be deposited, and where a check will be established to secure that the working of the forests is in accordance with the provisions of the working-plans. The Superindendent will visit the several provinces and set on foot provincial branches, whose duty it will be to carry out the actual work in the province concerned, under the orders of the Conservator, in accordance with general principles. In this way, a branch is already in existence in the North-Western Provinces, and a second branch established lately in Burma, will be brought into connection with the head-office. Eventually there should be a branch in each province.

41. The practice of drawing up annual plans of operations is now becoming universal, and with it a decided step in advance has been made; but complete continuity of work cannot be secured until working-plans have been prepared at any rate for all the more important forests.

CHAPTER IV.—PROTECTION AND IMPROVEMENT.

1.—General Protection.

42. The number of prosecutions for breaches of the forest law may be seen from the following statement:—

Provinces.	Number of Persons			Percentage of Acquittals to Prosecutions.
	Prosecuted.	Convicted or undertrial.	Acquitted.	
Bengal	230	200	30	13
North-Western Provinces and Oudh	1,024	876	148	14
Punjab	1,866	1,280	586	31
Central Provinces	1,242	1,079	163	13
British Burma	142	104	38	27
Coorg	73	31	42	58
Ajmere	283	238	45	16
Assam	89	48	41	46
Total ...	4,949	3,856	1,093	22
Berar	669	538	131	20
Biluchistan	10	6	4	40
Grand Total ...	5,628	4,400	1,228	22

The totals compare as follow with those of the previous four years:—

Year.	Number of Persons			Percentage of Acquittals to Prosecutions.
	Prosecuted.	Convicted or under trial.	Acquitted.	
1877-78	4,527	3,158	1,369	30
1878-79	4,435	3,458	977	22
1879-80	6,724	5,311	1,413	21
1880-81	6,467	4,593	1,874	29
1881-82	5,628	4,400	1,228	22
Average ...	5,556	4,184	1,372	25

These data show that, on the whole, the number of prosecutions is exceedingly small, and that it has fallen since 1879-80. The latter phenomenon is, however, explained by the fact that now a certain number of cases are compounded every year which do not appear in these statements. It is desirable that their numbers should be given in the provincial Reports. The percentage of acquittals to prosecutions varies considerably, from 13 per cent. in Bengal and the Central Provinces to 58 per cent. in Coorg, while the average is 22 per cent. in 1881-82, and 25 per cent. if calculated for the last five years. There are satisfactory signs from all parts of the country that the protection of the forests is steadily improving, and that the difficulties which were at first encountered in some parts are disappearing.

2.—Protection from Fire.

43. The results of fire protection on the areas under special protection during the year 1881-82 may be seen from the following table :—

Province.	Area, in square miles.		Percentage of failures to area attempted.	Cost, in Rupees.		Year when fire conservancy commenced.
	Attempted.	Actually protected.		Total.	Per square mile protected.	
Bengal	970	907	6	14,760	16	1872
North-Western Provinces and Oudh.	908	821	10	33,123	40	1872
Punjab	11	11	.....	551	50	1881
Central Provinces ...	1,413	1,209	14	13,750	11	1864
British Burma ...	181	178	2	11,357	64	1857
Coorg	192	73	62	1,417	19	1876
Ajmere	122	122	.....	639	5	1874
Assam	164	98	40	6,144	63	1873
Total ...	3,961	3,419	14	81,741	24	.....
Berar	936	864	8	4,671	5	1870
Grand Total ...	4,897	4,283	13	86,412	20	.....

The total results during the last five years were as follow :—

Year.	Area, in square miles.		Percentage of failures to area attempted.
	Attempted.	Actually protected.	
1877-78	3,243	2,723	16
1878-79	3,474	2,938	15
1879-80	4,072	3,709	9
1880-81	4,465	4,194	6
1881-82	4,897	4,283	13
Average ...	.....	.....	12

Owing to an unfavourable season, fire protection has not been so successful during the year under review as during the previous two years. In the Punjab special measures have only just been introduced, and the figures for Bengal are comparatively valueless, because areas have been included for which no special measures have been taken. The failures were most numerous in 1881-82 in Coorg and Assam, while success was greatest in Ajmere and British Burma. The cost of fire protection is smallest in Ajmere, Berar, and the Central Provinces, and it is highest in British Burma and Assam.

44. On the whole, the results are not quite as satisfactory as could be desired. According to the data for the last five years, each acre of forest under protection would on an average be overrun by fire once every eight or nine years, and although all the good done will not be undone again, still the accomplishment of the objects aimed at will be considerably delayed. It is true that areas can be stocked even if they are periodically overrun by fires, but it is obvious that the expenditure on account of protection must be much larger, and the time required very much longer. Moreover, even periodical fires will considerably reduce the quality of the material produced. On the whole, therefore, special efforts should be made to attain success by taking all possible precautions. In Bengal, for instance, the fire lines were in many instances not of sufficient breadth, and the staff did not in all cases come up to the required standard. From the Central Circle, in the North-Western Provinces, it is reported that 12,452 acres, out of 17,221 acres burnt, might have been saved by greater care on the part of the establishment. In British Burma 347 acres of plantations were burnt. From Assam it is reported that the causes of the fires were the inexperience of a new Divisional Officer in

the management of the Assam people, and mischief. From Berar it is reported that in six cases fires were caused by the carelessness of the establishment employed on line-burning.

Accidents are of course likely to happen under any circumstances, but it is essential that the chance of their occurring should be reduced to a minimum, and it is evident that it has not yet been possible to do this. Above all, the work must be systematically and carefully arranged, and only the most trustworthy members of the staff employed on it.

45. It has been repeatedly proposed to raise belts of evergreen trees along the boundaries, which would prevent fires running into the protected areas. This is no doubt a good idea, which should be carried out wherever evergreen trees will grow; but this is unfortunately not always the case. It is not, however, essential that the trees should be evergreen. Any trees grown close together along the boundary will help to keep the growth of grass down, and every effort should be made to stock the areas along the boundaries as rapidly as possible with any trees that will grow, and if these are evergreen so much the better.

3.—Plantations.

General.

46. The following statement exhibits the areas planted up to date and the expenditure incurred on them :—

Province.	Area, in acres.				Expenditure, in Rupees.		
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.	During the year.	Total.	Per acre.
Bengal	1,207	798	...	2,005	15,410	1,13,865	57
North-Western Provinces and Oudh ...	2,811	519	...	3,330	8,620	51,834	16
Punjab	17,127	...	926	16,201	24,783	6,77,176	42
Central Provinces	...	...	...	...	...	...	...
British Burma	7,131	872	...	8,003	12,151	3,57,627	45
Coorg	328	109	...	437	6,072	48,715	111
Ajmere	410	3	...	413	4,244	41,037	99
Assam	1,107	44	...	1,151	17,728	89,749	78
Total ...	30,121	2,345	926	31,540	89,008	13,80,003	44
Berar	1,409	...	...	1,409	281	33,496	24
Biluchistan	...	13	...	13	327	327	25
Grand Total ...	31,530	2,358	926	32,962	89,616	14,13,826	43

As many of the plantations have already yielded considerable returns, it is obvious that the information regarding the cost is of comparatively little use, and it is hoped that future Reports will show both receipts and charges.

Bengal.

47. The planted areas are classified as—

	Area, in acres.	Cost, in Rupees.	
		Total.	Per acre.
Regular plantations	1,215	1,00,185	82
Other cultural operations	790	13,680	17
Total ...	2,005	1,13,865	57

The regular plantations are again classified as—

	Acres.
Plantations of hill trees (Darjeeling)	485
Do. do. teak, tun, &c. (Kurseong, Chittagong) ...	705
Other plantations	25
Total ...	1,215

The plantations of hill trees in the Darjeeling District are the result of operations carried on to re-stock the areas cleared for the market, and this work will probably have to be continued, as the small extent of the area available for the supply of Darjeeling makes it extremely doubtful whether the system of natural reproduction, except as an accessory to planting, can be relied on. Natural reproduction, being according to present experience uncertain in those hills, requires more time than artificial reproduction, and it should be the special aim of the Department to re-stock at once the blocks cleared, so as to derive from the available area the highest possible yield of timber and fire-wood.

The teak plantations are experiments made with the object of introducing that valuable tree into Bengal, and they were commenced in 1868. It is not intended to extend materially those in the Kurseong Terai, as the area so far stocked is sufficient to test the suitableness of the locality and of the climate. In Chittagong, on the other hand, which is, as far as latitude goes, within the natural limits of teak, it is intended to proceed with the planting of teak mixed with indigenous species.

The other cultural operations consist of plantings and sowings in the Kurseong and Buxa Divisions, chiefly with the view of stocking savannas along the boundaries of the sâl forests. The results are not yet quite satisfactory, but the work is of great importance, and it should be steadily continued.

North-Western Provinces and Oudh.

48. The planting operations are distributed in the following manner amongst the three Circles :—

Circle.	Area, in acres.			Cost, in Rupees.	
	At the beginning of the year.	Added.	At the end of the year.	Total.	Per acre.
Central	1,047	131	1,178	21,961	19
Oudh	563	228	791	9,459	12
School	1,201	160	1,361	20,414	15
Total ...	2,811	519	3,330	51,834	16

The plantations are situated partly in the hills and partly in the plains, and they are stocked with deodar, other conifers, oaks, walnut, sâl, sissu, khair, tun, other trees and bamboos; but it cannot be ascertained from the Reports what parts of the area are stocked with each of these species.

Punjab.

49. .The plantations are classified as follow :—

	Area planted, in acres.			Outlay, in Rupees.	
	At the beginning of the year.	Added or excluded.	Total.	Total.	Per acre.
Regular plantations	15,428	+20	15,448	5,70,723	37
Rakh improvement	1,699	—946	753	1,06,453	141
Total ...	17,127	—926	16,201	6,77,176	42

The decrease in the area is due to the exclusion of unstocked areas.

The following operations may be specially mentioned :—

At Subathu, the sowing of 20 acres with chil.
In the Pabbi reserve, the re-sowing of 200 acres.
At Kalatop, the planting out of 6,425 deodar seedlings.
In Kulu, the sowing and planting of 90 acres with deodar.
In Bashahr, the sowing of 206 acres with deodar.
In Kot Lakhpat, the re-sowing of 140 acres with jhand, reru, and ber.

50. The object of planting at the Military Cantonment of Subathu is to secure a supply of timber and fuel for that station.

The work in the Pabbi reserve has been mentioned in previous Reviews. The reserve is situated on dry hills intersected by ravines and torrents. In 1877-78 an area of about 1,300 acres was fenced, all natural growth protected, and various trees, especially *Dodonæa viscosa* and *Acacia modesta*, planted in plots; at the same time the worst ravines were treated with fascines, dams, and dykes, and the silt belts formed above them were sown and planted. The results were at first encouraging, but subsequently, it appears, cattle got in and the damage done to the works was not repaired, so that there was hardly anything to show in 1881. Accordingly a fresh start was made during the year under review on a smaller area, 200 acres. The dams and dykes were systematically repaired and additional ones constructed, seed was largely sown in a variety of ways, and, as a matter of course, steps were taken to exclude cattle absolutely. The results are described as fairly successful, but there can be no doubt that success is not easy to obtain owing to the small and uncertain rainfall.

In Kalatop over 100,000 deodar trees have now been planted, and the results are described as very satisfactory.

The sowings and plantings in Kulu and Bashahr were made to augment natural reproduction, especially to fill up blanks. Those in Kulu are described as very successful.

At Changa Manga blanks were filled up to a considerable extent. That plantation is now being worked regularly, and it yields a considerable revenue every year.

Central Provinces.

51. Although no areas have been entered in the statement given in paragraph 46, a considerable amount of planting has been done. No doubt reproduction is attained chiefly by protection, and planting and sowing are only resorted to in exceptional cases to supply special demands and to improve the composition of the forests; but it appears worthy of consideration whether the success of fire-protection would not in many instances be increased by planting up areas now covered with grass at or near the boundaries, or in the middle, of the protected blocks, where a sufficient number of seed-bearing trees is not available. If in these cases the re-stocking is left to nature, very long periods must ordinarily elapse before any appreciable good can be effected, and the planting of strips or plots with suitable trees appears a measure which might well be considered by the Department.

British Burma.

52. The plantations are classified as follow :—

	Area planted, in acres.			Outlay, in Rupees.	
	At the beginning of the year.	Added during the year.	Total.	Total.	Per acre.
Regular plantations	3,544	20	3,564	3,18,411	89
Toungya do.	3,587	852	4,439	39,216	9
Total ...	7,131	872	8,003	3,57,627	45

The system of plantations carried on by departmental agency has now been abandoned for the system of toungya teak cultivation. The average number of teak seedlings growing in the new teak toungyas at the close of the year amounted to more than 600 per acre, which, with other trees likely to spring up gradually, is a sufficiently dense stocking of the ground. The expenditure incurred on these plantations is very low, and the results are certainly very satisfactory.

53. The Conservator of Forests of the Pegu Circle took advantage of the flowering of bamboos, and planted, at an average cost of Rs. 5 per acre, an area of 450 acres in the Bwet and Nyanleh reserves, on which the dead bamboos had been burnt.

Experimental cutch plantations have been made in the Bawbin and Bwet reserves, and it may be practicable to extend the toungya system to them. The first step, however, must be the formation of cutch reserves.

Assam.

54. The cultural operations are shown in the following statement :—

	Area planted, in acres.			Cost, in Rupees.	
	In previous years.	Added during the year.	Total.	Total.	Per acre.
Regular plantations	1,093	20	1,113	87,012	78
Other cultural operations ...	14	24	38	2,737	72
Total ...	1,107	44	1,151	89,749	78

As regards species, the area is distributed as follows :—

	Acres.
Caoutchouc plantations	912
Teak do.	170
Other do.	31
Sowings of Nahor and Ajhar	38
Total ...	1,151

55. With the exception of the caoutchouc plantations, the operations are as yet in the experimental stage. There is very little difference between the cost of regular plantations and the more rough system of cultivating nahor and ajhar in the Nambor forest, which circumstance requires investigation. The area planted with teak has been extended by 20 acres, but no extension of the caoutchouc plantations has been made during the year, owing to the plants being now kept in the nurseries until they are 10 feet in height. At the close of the year the nurseries in the Charduar reserve contained 176,249 caoutchouc seedlings ranging from a few inches up to 10 feet in height.

4.—Communications and Buildings.

56. The following table shows the outlay under this head during the year :—

Province.	Communications and Buildings.—A VII.			
	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	25,986	6,805	3	32,794
North-Western Provinces and Oudh	41,499	45,561	3,855	90,915
Punjab	5,465	4,764	66	10,295
Central Provinces	849	2,409	1,889	5,147
British Burma	1,106	13,154	2,519	16,779
Coorg	353	437	2	792
Assam	4,715	14,803	84	19,602
Ajmere	.....	121	.....	121
Surveys	.....	.....	.....	.....
Total ...	79,973	88,054	8,418	1,76,445
Berar	9,771	1,533	278	11,582
Grand Total ...	89,744	89,587	8,696	1,88,027

The totals compare with those of the previous four years as follow :—

	Rs.
1877-78	1,11,779
1878-79	1,21,822
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
Average per annum ...	1,45,229

57. Nearly one-half of the expenditure of 1881-82 was incurred in the North-Western Provinces and Oudh, in the construction of 188 miles of new forest roads and of a number of rest-houses. The main building of the Forest School at Dehra Dun has now been completed, but the construction of students' quarters has not yet been commenced.

On the whole, the opening out of the forests and the construction of rest-houses for the convenience of the staff continue to receive attention. Both are important subjects, which help to secure the financial and general success of the operations of the Department.

5.—Summary of Expenditure on Demarcation and Improvement of the Forests.

58. The expenditure under these heads will be found in the subjoined table :—

Province.	Communications and Buildings—A VII., in Rupees.	Demarcation and Improvement of Forests—A VIII., in Rupees.							Grand Total, in Rupees.
		Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.	
Bengal ...	32,794	6,857	15,361	174	15,410	11,385	572	49,759	82,553
North-Western Provinces and Oudh ...	90,915	9,416	10,337	3,376	8,797	31,023	8,728	71,677	1,62,592
Punjab ...	10,295	10,185	1,734	93	24,784	706	1,748	39,250	49,545
Central Provinces	5,147	871	...	966	4,662	13,307	3,883	23,689	28,836
British Burma	16,779	12,835	2,642	8,886	19,747	10,824	5,999	60,933	77,712
Coorg ...	792	869	47	753	6,072	1,261	...	9,002	9,794
Assam ...	19,602	7,462	185	4,729	16,032	6,500	8,090	42,998	62,600
Ajmere ...	121	8	...	...	4,244	606	270	5,128	5,249
Surveys ...	...	...	...	6,092	...	...	...	6,092	6,092
Total ...	1,76,445	48,503	30,306	25,069	99,748	75,612	29,290	3,08,528	4,84,973
Berar ...	11,582	1,987	4,036	1,967	359	4,570	1,002	13,921	25,503
Grand Total ...	1,88,027	50,490	34,342	27,036	1,00,107	80,182	30,292	3,22,449	5,10,476

The totals compare as follow with those of the previous four years :—

Year.	Communications and Buildings.	Demarcation and Improvement.	Total.
	Rs.	Rs.	Rs.
1877-78	1,11,779	2,42,962	3,54,741
1878-79	1,21,822	2,98,962	4,20,784
1879-80	1,66,193	2,55,647	4,21,840
1880-81	1,38,324	2,66,925	4,05,249
1881-82	1,88,027	3,22,449	5,10,476
Average per annum ...	1,45,229	2,77,389	4,22,618

CHAPTER V.—YIELD AND FINANCIAL RESULTS.

General.

59. Statement I appended to this Review shows the Receipts and Charges of the Department in the provinces immediately under the Government of India; Statement II gives the same data arranged under the main heads of Receipts and Charges; and Statement III exhibits the financial results of the Forest Department throughout India, including Madras and Bombay.

60. The following abstract shows the Receipts and Surplus of the various provinces arranged according to the total amount of Revenue :—

Province.	Total Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue, in per cent.
	Rs.	Rs.	Rs.	
British Burma	22,31,803	10,81,581	...	48
Bombay	18,28,089	6,79,631	...	37
Central Provinces	11,72,884	6,75,871	...	58
North-Western Provinces and Oudh	10,66,094	1,49,882	...	14
Punjab	6,88,308	1,72,038	...	25
Bengal	6,33,734	2,39,125	...	38
Madras	5,06,710	1,15,524	...	23
Berar	2,33,511	80,526	...	34
Assam	1,66,053	692	...	0·4
Coorg	1,00,364	40,506	...	40
Biluchistan	18,617	936	...	5
Ajmere	4,066	...	9,888	...
Forest Survey	...	...	42,489	...
Total ...	86,50,233	31,83,935	...	37

It will be noticed that Burma stands first as regards the gross and net revenue, while of the seven great provinces, Madras stands last. As regards the proportion of surplus to gross revenue, the Central Provinces come first of the seven great provinces with 58 per cent., then Burma with 48, Bengal 38, Bombay 37, Punjab 25, and Madras 23, while the North-Western Provinces and Oudh stand last with 14 per cent.

Leaving the Survey Branch out of consideration, Ajmere is the only province which has worked with a deficit, and from which no surplus can be expected for some years to come. Assam has narrowly escaped showing a deficit.

61. The total financial results of the Forest Department in India during the last 19 years, rounded off in lakhs of Rupees, are as follow :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	In lakhs of Rupees.			
1864-65 to 1868-69 (average per year)	36	22	14	39
1869-70 to 1873-74 (ditto)	55	38	17	31
1874-75 to 1878-79 (ditto)	64	43	21	33
1879-80	68	45	23	34
1880-81	71	46	25	35
1881-82	87	55	32	37
1882-83 (latest figures)	95	60	35	37

The revenue has risen steadily from 36 lakhs to 95 lakhs during the last 19 years, and one-half of this rise has taken place during the last five years, which seems to indicate that the effect of forest conservancy on the balance sheet of the Department is becoming more pronounced every year.

The surplus has risen in almost exactly the same proportion from 14 lakhs to 35 lakhs, but as much as two-thirds of this increase has occurred during the last five years. This is all the more satisfactory, as a very much larger sum is now spent annually on the formation, protection, and improvement of the forests than was the case in the earlier years of forest conservancy.

62. The surplus revenue, arranged according to Presidencies, and excluding the non-British provinces of Berar and Biluchistan, has been as follows during the last four years :—

Year.	Name of Presidency.			Total.
	Bengal.	Madras.	Bombay.	
	Rs.	Rs.	Rs.	Rs.
1878-79	12,29,982	41,890	1,82,732	14,54,604
1879-80	15,96,541	—15,478	4,68,399	20,49,462
1880-81	18,29,876	1,49,835	4,07,711	23,87,422
1881-82	23,07,318	1,15,524	6,79,631	31,02,473

Bengal.

63. The quantities of timber and fuel removed from the forests by Government agency during the year are as follow, compared with those of previous years :—

Year.	Timber.	Fuel.
	Cubic feet.	Cubic feet.
1878-79	78,082	392,472
1879-80	100,017	333,492
1880-81	110,556	340,249
1881-82	111,428	397,775
Average ...	100,021	365,997

64. The quantities removed by private parties during the year under review are given in various measures, so that a comparison is difficult, but it appears that they were approximately as follow :—

Timber	... ...	5,000,000 cubic feet.
Fuel	... ...	8,000,000 maunds.

Accordingly the departmental operations extend over about 1-50th part of the timber and about 1-40th part of the fuel extracted.

65. Next to timber and fuel, the most important items are bamboos, canes, grass, and golpatta (leaves of *Phœnix paludosa*), of which the following quantities were removed during the year :—

Bamboos	... ...	17,678,870 pieces.
Canes, about	... ...	3,800,000 „
Grass, „	... ...	5,000,000 bundles.
Golpatta	... ...	3,094,052 maunds.

66. The financial results of the year, arranged under the main heads of Receipts and Charges, are as follow :—

	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Departmental timber and fuel operations ...	1,88,897	1,56,181	32,716	.....
Other revenue	4,44,837	1,12,160	3,32,677	.....
Formation, improvement, and protection ...	.....	1,26,268	.....	1,26,268
Total ...	6,33,734	3,94,609	2,39,125	.....

Taking into consideration the data given above, it appears that the departmental operations were at least four times as profitable as the disposal of produce to purchasers in the forests.

67. The following table shows the distribution of the receipts and charges amongst reserved, protected, and open forests :—

	Amounts credited and debited to the Forest Department.			Area under the management of the Forest Department.	Revenue per square mile.	
	Receipts.	Charges.	Surplus.		Gross.	Net.
	Rs.	Rs.	Rs.	Square miles.	Rs.	Rs.
Reserved forests	5,50,514	3,71,052	1,79,462	4,236	130	42
Protected forests	19,575	10,069	9,506	1,925	10	5
Open and private forests ...	63,645	13,488	50,157	5,108	12	10
Total ...	6,33,734	3,94,609	2,39,125	11,269	56	21

These data leave no doubt that the formation of reserves has resulted in a great improvement of the receipts from the Government forest estates. In fact, the increase in the receipts has kept pace with that in the area of reserves, as will be seen from the following table :—

Year.	Receipts.	Charges.	Surplus.	Area of Reserves.
	Rs.	Rs.	Rs.	Square miles.
1872-73	1,16,751	73,581	43,170	106
1873-74	1,16,633	85,488	31,145	120
1874-75	1,85,933	99,403	86,530	1,467
1875-76	1,98,274	1,39,086	59,188	2,585
1876-77	2,22,401	2,11,689	10,712	3,390
1877-78	4,26,228	2,61,211	1,65,017	3,430
1878-79	4,16,024	3,38,671	77,353	2,967
1879-80	4,49,524	2,75,748	1,73,776	2,945
1880-81	5,61,340	3,35,381	2,25,959	3,411
1881-82	6,33,734	3,94,609	2,39,125	4,236

North-Western Provinces and Oudh.

68. It has not been possible to give the data representing the yield of the forests in a uniform manner for all three Circles. Under these circumstances, it will suffice to recapitulate here a few of the main facts.

The following table exhibits the trees cut by departmental agency, according to selection fellings :—

Circle.	Number of trees cut.			Estimated contents, in cubic feet.
	4′ 6″ in girth and over.	Under 4′ 6″ in girth.	Total.	
Central	8,061	18,003	26,064	427,563
Oudh	3,160	...	3,160	146,204
School	2,163	98	2,261	427,715
Total ...	13,384	18,101	31,485	1,001,482

This gives an average of 32 cubic feet per tree all round. As regards species, the trees may be classed as follow :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other conifers.	Oak.	Box.	Miscellaneous.	Total.
Central ...	2,534	3,253	...	861	3,105	247	330	15,734	26,064
Oudh ...	2,528	101	531	...	...	...	...	...	3,160
School ...	...	...	...	1,289	460	372	98	42	2,261
Total ...	5,062	3,354	531	2,150	3,565	619	428	15,776	31,485

69. Two small shipments of boxwood, comprising in all about 40 tons, were made during the year. The prices realised resulted in so small a surplus that this in itself would not be sufficient to encourage the cultivation of the tree. It is, however, desirable to make further shipments, and to try the market fully, before a definite line of policy with regard to box is decided on.

70. The financial results compare as follow with those of the previous four years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1877-78	12,03,108	7,28,225	4,74,883
1878-79	11,26,755	8,09,977	3,16,778
1879-80	10,39,966	7,16,594	3,23,372
1880-81	9,42,229	6,79,574	2,62,655
1881-82	10,66,094	9,16,212	1,49,882

The deterioration of the financial balance sheet, which has taken place during the last few years, has now reduced the surplus to less than one-third of what it was in 1877-78. The figures for 1881-82 are made up as follow in the several Circles :—

Circle.	Receipts.	Charges.	Surplus.	Deficit.	Surplus in 1880-81.
	Rs.	Rs.	Rs.	Rs.	Rs.
Central	5,04,038	3,04,893	1,99,145	...	1,95,170
Oudh	3,11,145	2,24,506	86,639	...	64,944
School	2,50,911	3,86,813	...	1,35,902	2,541
Total ...	10,66,094	9,16,212	1,49,882	...	2,62,655

There was a slight improvement in the Central and Oudh Circles during the year, but in the School Circle the falling-off in the net results amounted to Rs. 1,38,443. This is accounted for by the final adjustment of Messrs. Winton and Braidwood's account with the Department, the total sum paid to that firm on account of the purchase of 165,552 cubic feet of converted timber being given as Rs. 2,00,586. Without this transaction the surplus would have amounted to about 3½ lakhs of rupees.

71. Arranged under the main heads of Receipts and Charges, the financial results present the following aspect:—

Year.	I. Departmental timber operations.			II. Other revenue.			III. Formation, protection, and improvement of forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1879-80	6,35,714	3,47,201	+2,88,513	4,04,252	1,07,648	2,96,604	2,61,745
1880-81	4,40,358	3,20,292	+1,20,066	5,01,871	1,34,145	3,67,726	2,25,137
1881-82	4,29,730	5,15,975	—86,245	6,36,364	1,61,278	4,75,086	2,38,959
Average of 3 years ...	5,01,934	3,94,489	+1,07,445	5,14,162	1,34,357	3,79,805	2,41,947

Considering that the value of timber and fuel in depôts at the end of 1881-82 appears to have been somewhat greater than in the beginning of 1879-80, the results of the departmental timber operations are not unsatisfactory. It has, however, been recognized in the Central and School Circles that such operations are less profitable than the disposal of the timber to purchasers in the forests. In the School Circle certain departmental works must be continued for purposes of instruction, but, with this exception, there seems to be no objection to reduce departmental timber operations as soon as satisfactory arrangements can be made to sell the material *in situ*.

The financial results of the working of the three hill divisions of Naini Tal, Ranikhet, and Jaunsar are not satisfactory. It would appear either that the expenditure is too high, or that the timber and firewood are sold at too low rates.

72. Regarding the comparative value of departmental working, and the removal of produce by purchasers, the Conservator of Forests, Central Circle, gives the following information :—

Particulars.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
I.—Departmental timber operations	1,77,828	1,49,834	27,994	...
II.—Other revenue	3,26,209	64,647	2,61,562	...
III.—Formation, protection, and improvement of the forests...	...	90,412	...	90,412
Total ...	5,04,037	3,04,893	2,89,556	90,412

The quantities of timber and other produce worked out by Government agency compare as follow with those removed by purchasers :—

Description of material.		Removed by Government agency.	Removed by private parties.
Timber	C. ft.	179,125	538,092
Fire-wood and charcoal	Mds.	159,144	168,643
Other items, as bamboos and grazing and fodder grass, &c. ...	Rs.	7,294	128,359

Deducting the last two items from the surplus given in the statement preceding the above table, the financial results, as regards the removal of timber and fire-wood, may be represented as follows :—

	Material removed.		Surplus of Receipts over Charges.
	Timber.	Fire-wood.	
	C. ft.	Mds.	Rs.
Government agency	179,125	159,144	20,700
Private enterprise	538,092	168,643	1,33,203

Whilst the amount of timber removed by private enterprise is only three times as much as that sold by Government agency, and the amount of fire-wood and charcoal very nearly the same in either case, the surplus of receipts over charges from private enterprise is very nearly seven times as much as the surplus from Government agency.

Punjab.

73. The departmental timber operations seem to have been conducted on a somewhat larger scale than in the previous year, the figures being as follow :—

	1880-81. Cubic feet.	1881-82. Cubic feet.	Increase. Cubic feet.
Timber received during the year ...	496,676	543,405	46,729
Timber sold during the year ...	476,208	578,940	102,732

On the other hand, the quantity of firewood removed from the forests by purchasers has fallen off by about 3½ millions of cubic feet.

74. The total quantity of material removed from the forests by Government agency, by purchasers, and under free grants is as follows :—

Description of Produce.	1880-81.	1881-82.	Increase.	Decrease.
Trees and poles ... ... No.	56,633	58,507	1,874	...
Fire-wood ... ... C. ft. stacked	5,958,158	2,169,962	...	3,788,196
Charcoal ... ... Mds.	6,497	18,872	12,375	...
Bamboos ... ... Pieces.	685,271	596,377	...	88,894
Coal ... ... Tons.	4,157	4,292	135	...

75. The quantity of timber imported from foreign territory is somewhat smaller than the amount imported during the previous year, the figures being as follow :—

Year.	Logs.	Sleepers.
1880-81	54,282	270,021
1881-82	23,389	307,929
Decrease	30,893	.....
Increase	.....	37,908

76. The financial results compare as follow with those of previous years :—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1877-78	6,83,710	5,17,166	1,66,544	.....
1878-79	5,00,620	5,23,554	.....	22,934
1879-80	6,49,819	4,80,676	1,69,143	.....
1880-81	6,71,679	4,95,368	1,76,311	.....
1881-82	6,88,308	5,16,270	1,72,038	.....
Average ...	6,38,827	5,06,607	1,32,220	.....

Owing to the expenditure having risen more than the receipts, there is a slight falling off in the surplus: at the same time the financial results of the past year are more favourable than the average of the last five years.

Central Provinces.

77. The following table shows the financial results of the departmental timber operations during the last five years:—

Year.	Receipts.	Charges.	Surplus or Deficit.
	Rs.	Rs.	Rs.
1877-78 to 1880-81	4,70,742	5,35,878	—65,136
1881-82	3,10,176	1,38,313	+1,71,863
Total ...	7,80,918	6,74,191	+1,06,727

Departmental timber operations are carried on in the Banjar and Ahiri reserves. Both forests are situated at considerable distances from the markets; moreover, part of the material removed of late years consisted of old timber found lying in the forests, while another part of the material was bought from private owners for conversion, in order to keep the Allapilli saw-mill fully employed: All the timber felled in the Government forests was removed more for the purpose of encouraging the growth of young teak than with the view of any great profit. Under these circumstances, the results are not unsatisfactory. Material which would otherwise not have been brought to market has been made use of, and at the same time a small surplus was realized, which is due to the economical way in which the operations have been conducted. When the rivers used for floating timber have been opened out and roads constructed, the net revenue derived from these forests will no doubt considerably increase.

78. The financial results, arranged according to first and second class reserves, are as follow:—

	Receipts.	Surplus.	Area, in square miles.	Revenue per square mile.	
				Gross.	Net.
	Rs.	Rs.		Rs.	Rs.
First class reserves	4,15,679	1,60,149	2,588	161	62
Second ditto	7,57,205	5,15,722	16,842	45	31
Total ...	11,72,884	6,75,871	19,430	60	35

It will be noticed that the first class reserves yielded double the net revenue per square mile of the second class reserves.

79. On the whole, the receipts have steadily risen for years past, and of late the first class reserves have considerably contributed towards this end. The following is an abstract of the financial results for the last 12 years, arranged in periods of three years:—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.
1870-71 to 1872-73, average per year	5,29,186	2,66,869	50
1873-74 to 1875-76 ditto	6,51,827	3,35,641	51
1876-77 to 1878-79 ditto	7,32,699	3,99,355	55
1879-80 to 1881-82 ditto	10,09,915	5,04,882	50

It is satisfactory to notice that the proportion between surplus and receipts has not fallen off.

British Burma.

80. The following trees were girdled during the year:—

Teak trees	...	...	...	...	18,850
Other trees	...	...	...	...	5,359
			Total	...	24,209

Only 200 teak trees were girdled in the reserves, the remainder being obtained from the unreserved forests. It is reported that about 30,000 teak trees fit for girdling remain in the unreserved forests, so that all girdling operations will have to be carried on in the reserves at the end of two years.

81. As far as it has been possible to combine the figures of the two Circles, the following data represent the outturn of the year:—

	Timber extracted, in tons.		
	Teak.	Other timber.	Total.
By Government agency	29,615	20,902	50,517
Under trade permits	...	23,277	23,277
Do. free permits	...	42,413	42,413
In other ways	1,631	579	2,210
Total	31,246	87,171	118,417

The outturn of teak has risen from 22,253 tons in 1880-81 to 31,246 tons in 1881-82, and the quantity of timber of other kinds is nearly double that brought to market in the previous year.

On the other hand, 176,000 cutch trees *(Acacia Catechu)* were cut during the year, as against 436,500 cut in the year 1880-81. This great falling-off is said to be due to the supply outside the reserves being nearly exhausted; but it is possible that the raising of the fee from Rs. 10 to Rs. 20 per cauldron may have influenced the manufacture of the article. Under any circumstances, it seems clear that the stock of cutch trees available is not sufficient to maintain the outturn of the last few years, and a reduction in the quantity of cutch brought to market seems unavoidable, until protection and reproduction have replaced the trees lately removed from the forests. Steps should, therefore, be taken, without delay, to constitute a sufficient area of cutch reserves.

82. The trade in teak in the province during the last four years is exhibited in the following statement:—

Year.	In tons of 50 cubic feet.			
	Yield of Government forests in British Burma.	Imports from Foreign territory.	Total.	Export from Rangoon and Moulmein to Indian and other ports.
1878-79	22,763	170,610	193,373	133,820
1879-80	17,585	157,260	174,845	121,161
1880-81	22,253	124,618	146,871	151,274
1881-82	31,246	154,290	185,536	133,751
Average per year ...	23,462	151,694	175,156	135,001

All these figures exhibit a good deal of fluctuation, which is caused by the state of the market, more or less favourable floods in the rivers, and the

number of trees girdled in previous years. During the last four years the British forests yielded 13 per cent. of the total quantity of teak brought into the market, and the forests beyond the frontier 87 per cent. Of the total outturn, 23 per cent. were consumed in Burma, while 77 per cent. were exported to India and to other countries.

83. The timber merchants of Moulmein having represented that the duty levied at Moulmein on foreign timber put them at a disadvantage as compared with the timber merchants of Rangoon, and that the principle of levying it is indefensible, the duty was reduced from 7 per cent. *ad valorem* to 1 per cent., and it has since the close of the year been further reduced to ½ per cent., which amount is considered sufficient to cover the expenses imposed on Government by the control of the timber in transit. A few months' experience seems to have shown that the benefit of these reductions is appropriated by the owners of the timber in the Foreign States, while the merchants of Moulmein have failed to realize the advantage expected from the reduction.

84. The revenue of the year, amounting to the handsome sum of Rs. 22,31,803, is considerably larger than that realized in any previous year. The following table shows the financial progress during the last 10 years :—

Year.	Receipts.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	
1872-73	8,27,469	4,91,445	59
1873-74	10,68,621	5,94,090	56
1874-75	10,74,802	4,12,164	38
1875-76	17,79,020	9,64,270	54
1876-77	15,51,468	5,46,424	35
1877-78	16,03,023	7,47,207	47
1878-79	11,37,562	4,19,161	37
1879-80	11,80,190	4,26,700	36
1880-81	15,16,613	8,04,045	53
1881-82	22,31,803	10,81,581	48

As the revenue depends to a considerable extent on the state of the export trade, it stands to reason that the receipts must fluctuate from year to year. At present the price of teak is very high, and the receipts in 1882-83 are reported to exceed even those of 1881-82, although the reduction of the import duty has caused a loss of about 2½ lakhs of Rupees; but it must not be expected that the receipts will maintain their present height. On the whole, however, the revenue is decidedly rising, and the Burma forests are without doubt the most valuable in India.

Coorg.

85. The working of the Ghat forests is not in a satisfactory condition. After the failure of the license system, the plan of working the forests through a contractor was tried, but this plan failed also. It is now proposed to work them departmentally, but whether this method will be financially successful remains to be seen.

86. The financial results of the last five years are as follow :—

	Receipts.	Surplus.
	Rs.	Rs.
1877-78 to 1880-81, average per year	85,669	39,983
1881-82	1,00,364	40,506

The receipts are higher than the average of the previous four years, but the surplus is about the same, which is not altogether satisfactory.

87. The quantity of sandalwood sold during the last four years and the prices realized are as follow :—

Year.	Tons.	Amount realized.	
		Total.	Per ton.
		Rs.	Rs.
1878-79	33¾	14,346	425
1879-80	101	35,890	355
1880-81	112⅓	34,324	305
1881-82	60¾	14,054	231
Average per year ...	77	24,653	320

It has not been satisfactorily explained whether the gradually falling prices are due to combination among the purchasers, or to the flooded state of the market. It is proposed to sell the wood in future at a suitable station in Mysore, so as to obtain the benefit of a wider competition.

Assam.

88. The departmental timber operations have been reduced during the year, only 378 trees having been cut, against 599 in the previous year. The number of trees sold standing to private purchasers has, on the other hand, increased from 4,411 to 6,112, besides 4,377 trees which were made over free of charge to the Assam Railway and Trading Company. Upwards of 23,000 maunds of charcoal have been removed from the Government forests, and it seems likely that the demand for this article will largely increase as the forests on the tea plantations are reduced.

89. The financial results of the last three years are as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1879-80	1,64,336	1,32,830	31,506
1880-81	1,68,997	1,42,725	26,272
1881-82	1,66,053	1,65,361	692

While the receipts have been stationary, the charges have risen steadily, until they now equal the receipts. The unsatisfactory state of the tea industry has affected the revenue unfavourably, and no large surplus can be expected from the Assam forests for some years to come.

Berar.

90. The financial results of the year compare as follow with those of the previous three years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1878-79	2,85,670	1,07,350	1,78,320
1879-80	3,07,501	1,10,514	1,96,987
1880-81	2,66,556	1,28,969	1,37,587
1881-82	2,33,511	1,52,985	80,526

The surplus has fallen off during the last three years, and it is desirable that the matter should be fully investigated.

Export of Forest Produce.

91. The following statement gives some indication of the quantities of forest produce exported from India during the year :—

Articles.	Quantity in tons of 20 cwt.; in the case of teak, 50 cubic feet,		Valuations at port of shipment in 1881-82.	
	Average of eleven years, 1870-71 to 1880-81.	In 1881-82.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	544	534	10,88,426	2,038
2. Shell-lac	3,024	4,324	55,52,413	1,284
3. Lac-dye	459	251	91,958	366
4. Sandalwood, Ebony, and other ornamental woods	.....	(Not known)	4,69,790	(Not known)
5. Cutch and Gambier	13,479	9,944	25,30,840	255
6. Myrabolans...	18,179*	19,578	14,44,925	74
7. Teak	53,560	56,377	50,67,917	90
Total ...	.....	.....	1,62,46,269	.....

* Average of six years only.

There has been a fair increase in the export of shell-lac, and a considerable falling-off in that of cutch and gambier. The value of the total exports is almost the same as that of the previous year.

APPENDICES.

APPENDIX I.

Rules regarding the appointment, promotion, &c., of Officers of the Forest Department.

I.—THE present rules refer to Conservators, Deputy, and Assistant Conservators, and to officers holding special appointments but taking rank as Deputy Conservators.

II.—The class of Assistant Conservators is recruited chiefly by the appointment by the Secretary of State of candidates who, after having passed the Entrance Examination held annually at the India Office, have successfully completed the prescribed course of professional training.

Vacancies that may arise in the class of Assistant Conservators should be reported by Local Governments for the orders of the Government of India, with proposals for filling them, either by posting to their province trained officers expected from home, or by the promotion of deserving Sub-Assistant Conservators.

III.—Assistant Conservators will, as a rule, be appointed to the 3rd grade, and they will be eligible for promotion successively to the 2nd and 1st grades on their passing the prescribed examinations and obtaining the needful certificate of qualification from the Conservator.

Promotion, as far as vacancies permit, will not necessarily be given immediately on passing, or solely in consequence of passing, the examinations: the merits and qualifications of each officer will also be taken into consideration.

IV.—The tests and qualifications required for promotion in the grades of Assistant Conservators are as follow:—

Before promotion to the 2nd grade of Assistant Conservators, an officer must have passed the examination in a "principal" language of his province by the Lower Standard, as prescribed by the rules in force for the time being, and must have obtained a certificate from the Conservator of Forests that he is competent to hold charge of a forest range.

Before promotion to the 1st grade of Assistant Conservators, an officer must have passed the examinations in a "principal" language of his province by the Higher Standard, in the elements of law, and the land revenue system of his province, as prescribed by the rules in force for the time being, and he must have obtained a certificate from the Conservator of Forests in his province that he is competent to hold charge of a forest division.

An officer transferred to another province during the first two years of his service in India is required to pass in a "principal" language of his new province by the lower standard within two years from the date of his transfer. If he fails so to pass, he will not be eligible for promotion, although he may have qualified for such promotion in other respects.

In the provinces in which two languages are "principal," an officer who has passed in both languages by the Lower Standard, and an officer who has passed by the Lower Standard in two languages, each being a "principal" language of a different province in which he has served, will, if otherwise qualified, be eligible for promotion to the 1st grade of Assistant Conservators without being required to pass in any language by the Higher Standard.

In British Burma an officer who has passed by the Lower Standard in Burmese, and has also passed the examination in the Karen language, will be eligible for promotion in the same way.

In conducting the examinations in the elements of Law and in the Land Revenue Systems, Forest Officers should be called upon to answer questions set from the following parts of Baden-Powell's Manuals of "The Land Revenue Systems and Land Tenures of British India" and "Jurisprudence for Forest Officers," respectively:—

(*a*) *Land Revenue Systems.*—Book I (Introductory), and the Chapters which refer to the system of the province in which the officer is serving.

(*b*) *Forest Law.*—Parts I to IV. [*N.B.*—The study of Part V, "The Civil Law as related to Forest Administration," should be urged upon Forest Officers, but it is not considered desirable at present to extend the prescribed examination to this Part.]

The certificates of qualification for promotion to the higher grades of Assistant Conservators shall be in the following forms:—

1. "I certify that Mr. *A. B.*, Assistant Conservator of Forests of the 3rd grade [or 2nd grade], has passed the prescribed examination for the Lower Standard [or the Higher Standard] in the*———— language, [and in the elements of law and of the land revenue system of †————]"

* Here enter the language or languages in which the officer has passed.

† Here enter the name of the province.

2. "I certify that I consider Mr. *A. B.*, Assistant Conservator of Forests of the 3rd grade [or 2nd grade], fully competent to hold charge of a forest range [or a forest division].

(Signature)

Conservator of Forests,————————."

The Conservator of Forests may grant the second of these certificates as soon as he considers an officer fit to hold charge of a forest range [or a forest division], even although such officer may not have then passed in the vernacular, in the elements of law, or in the land revenue system of the province.

In the case of Assistant Conservators who are natives of India, it will rest with Local Governments to lay down rules regarding the qualification in languages to be required for their promotion to the 1st and 2nd grades of Assistant Conservators, in lieu of those laid down in this paragraph.

V.—As the numbers in the 2nd and 3rd grades of Assistant Conservators are not fixed, officers may be promoted substantively from the 3rd to the 2nd grade on qualifying, irrespective of the numbers in each of the two grades, but no officiating promotions will be made to the 2nd grade of Assistant Conservators. Promotions beyond the 2nd grade of Assistant Conservators will be regulated by vacancies.

VI.—Promotions from the 3rd grade of Assistant Conservators up to and including the 2nd grade of Deputy Conservators, whether permanent or temporary, will be made by Local Governments. In the case of officers on the Bengal-Assam List, such promotions will be made by the Lieutenant-Governor of Bengal in consultation with the Chief Commissioner of Assam. Similar promotions on the Central Provinces-Berar List will be made by the Chief Commissioner of the Central Provinces in consultation with the Resident at Hyderabad. Should any difference of opinion arise as to the promotions to be made, the case should be reported for the decision of the Government of India.

VII.—Promotions from the 2nd grade to the 1st grade of Deputy Conservators, the appointment and promotion of Conservators, and the appointment or promotion of the six special officers, whether permanent or temporary, will be made by the Government of India.

To enable the Government of India to select officers for promotion in these cases, Local Governments should submit, immediately after the Annual Progress Report of the Forest Department has been reviewed by them, the names of any officers whom they may consider deserving of advancement.

VIII.—In the absence of properly qualified officers in the higher grades, junior officers will be eligible for promotion. Promotion will not be given, and cannot under any circumstances be claimed, on grounds of seniority alone.

IX.—An officer officiating in a class divided into grades will officiate in, and be entitled to the pay of, the lowest of such grades, unless it be otherwise specially ordered with the sanction of the Government of India.

An officer officiating in a grade of the same class as, and immediately above, his own, is entitled to the pay of that grade.

X.—An officiating officer in any case not provided for by Rule IX will be entitled to an acting allowance of one-fifth of the pay of the grade in which he officiates, or to such other allowance as may be specially fixed by the Government of India.

XI.—In cases of misconduct, Local Governments may reduce Deputy Conservators to the class of Assistants, and Assistants or Deputy Conservators to a lower grade in the same class. The reduction of Conservators and of officers holding any of the six special appointments to a lower grade or class, and the removal of Conservators and Deputy or Assistant Conservators from the staff, will rest with the Government of India.

XII.—When an officer is reduced to a lower class or grade, his name will, as a rule, be placed at the bottom of the list of officers of that grade; but should the Local Government, under whom the officer is serving, desire in any special case that the officer degraded be placed in any other position in the lower grade, the fact should be stated in the order reducing the officer.

XIII.—The Government of India alone has the power of accepting the resignation of a Conservator or of a Deputy or Assistant Conservator.

XIV.—Transfers from one province to another will only be made in exceptional cases, but the Government of India reserves to itself the right of transferring officers from one province to another for the benefit of the public service, or on grounds of health. When an officer is transferred from one province to another at his own request, such transfer will ordinarily carry with it the condition that his name shall be placed in the list of his new province at the bottom of the grade or class to which he belongs.

XV.—Postings and transfers of officers within a province will be made by Local Governments.

XVI.—Leave of absence may be granted by Local Governments to officers of the Forest Department under the rules applicable to the branch of the service to which such officers

belong. In dealing with applications for leave, Local Governments will, in granting leave, take into consideration the fact that the staff now allotted to each province cannot, as a rule, be augmented by the Government of India in order to provide substitutes for officers on leave.

XVII.—The fact and date of retirement of officers in all grades should be specially reported to the Government of India, and that Government should also be furnished promptly and regularly with copies of all notifications issued by Local Governments which refer to the promotion or reduction of officers, whether permanent or temporary, or to the grant of leave.

APPENDIX II.

Memorandum of conditions for the admission and training of candidates for the appointment of Forest Ranger at the Forest School: dated the 1st December 1881.

1. CANDIDATES for appointment as Forest Rangers, who desire to be received at the Central Forest School, will be selected by Conservators of Forests, acting under such orders as may from time to time be given by the Local Government or Administration under which they are serving. Ordinarily only natives of India will be so admitted.

2. As a rule, no students will be received at the Forest School who have not proved their fitness for Forest work by service in the subordinate staff of the Department, whether permanent or temporary, during a period of not less than twelve months.

3. It will be the duty of the Conservator to satisfy himself that the candidate has a good moral character, active habits, fair powers of observation, and sense of locality, and such other qualifications as are necessary for a Forest Ranger.

4. Candidates for admission to the School must produce the certificate of having passed the Entrance Examination of an Indian University. In the case of both an English and an Oriental side existing at any University, the Entrance Examination must have been passed on the English side. The condition of having passed the Entrance Examination may be dispensed with in the case of candidates now in the Forest service, provided the Director of the Forest School is satisfied that they have attained such a standard of general education as will enable them to follow the course of instruction with advantage.

5. Students must on admission to the School be not less than 18 or more than 25 years of age. Each candidate will be required to furnish a certificate of sound health, good vision, and hearing from the Civil Surgeon of the station nearest to his place of residence.

6. Candidates selected for admission to the School will join at Dehra Dún on the 1st July. The course of training will be partly theoretical and partly practical. The theoretical course will generally extend from the 1st July to the 31st October, while the remaining eight months of the year will be devoted to practical work in the forests. The Forest Ranger's certificate may be granted at the end of sixteen months, which will include two terms of theoretical teaching. But it will rest with the Director to extend the course of instruction by an additional period not exceeding twelve months.

The theoretical course will be gone through at Dehra Dún. The practical instruction will be given either in the Divisions attached to the Forest School, or in the Forest Survey, the Working-Plan Branch, or in selected Divisions of other provinces or circles.

7. While at the Forest School students will receive the same rate of pay which they drew while employed in the subordinate staff of their province, or such other allowance as the Conservator, under the authority of the Local Government, may sanction, the Government of India being informed of the orders passed in each case.

8. During the course of instruction the Director will furnish Conservators of Forests with monthly reports on the application and progress of the students sent by them to the School.

The Director has power to dismiss any student for misconduct; and a student thus dismissed will not be re-admitted to the School. The Director may also remand to his province, or circle, any student who, in his opinion, is not suitable or sufficiently promising.

9. Successful students who at the close of the course of instruction have received a Forest Ranger's certificate will, as a rule, return to, and be employed in, the province or circle from which they were sent to the Forest School. On return to their province or circle they will be appointed to the class of Forest Ranger, or, in the absence of vacancies, to the higher grades in the class of Forester.

10. After the 1st April 1885 no person who has not obtained the Forest Ranger's certificate at the Forest School, in the manner here prescribed, shall be appointed a Forest Ranger without the special sanction in each case of the Local Government.

11. Forest Rangers, whether they have received the Forest Ranger's certificate or not, but who, in any case, have served for not less than two years as Forest Ranger, may, under such rules and conditions as may be prescribed by Government, be deputed to the Forest School for a course of instruction, with the view of qualifying for promotion to the superior staff. But no Forest Ranger will be admitted to the School who is over 30 years of age.

STATEMENT I.

Summary of the Revenue and Expenditure of the Forest Department in the Provinces immediately under the Government of India for the year 1881-82.

Budget Heads.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmere.	Surveys.	Total of British Provinces under the Government of India.	Hyderabad Assigned Districts.	Biluchistan.	Grand Total.
Receipts.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,86,308	4,29,082	3,67,487	3,10,226	15,55,247	37,120	32,836	504	...	29,18,810	3,630	8,818	29,31,258
II.—Ditto ditto by consumers or purchasers ...	4,16,865	6,06,403	2,77,159	8,31,748	1,76,817	28,582	*1,22,312	2,072	...	24,61,958	2,26,396	9,774	26,98,128
III.—Confiscated drift and waif wood	3,767	11,585	11,416	4,728	1,58,359	5,500	1,777	9	...	1,97,141	2,150	...	1,99,291
IV.—Revenue from forests not managed by Government ...	...	5,624	11,823	8,463	3,32,877	...	7,651	...	...	3,66,438	...	...	3,66,438
V.—Miscellaneous	26,794	13,400	20,423	17,719	8,503	29,162	1,477	1,481	...	1,18,959	1,335	25	1,20,319
Total Receipts ...	6,33,734	10,66,094	6,88,308	11,72,884	22,31,803	1,00,364	1,66,053	4,066	...	60,63,306	2,33,511	18,617	63,15,434
Expenditure.													
A.—Conservancy and Works.													
I.—Timber and other produce removed from the forests by Government agency.	1,13,252	3,88,434	1,41,308	1,20,392	6,98,190	16,511	4,481	300	...	14,82,868	284	4,972	14,88,124
II.—Ditto ditto by consumers or purchasers ...	31,588	31,682	882	1,53,104	7,700	...	4,606	1	...	2,29,563	18,669	...	2,48,232
III.—Confiscated drift and waif wood	395	860	622	...	67,016	...	144	...	...	69,037	...	...	69,037
IV.—Revenue from forests not managed by Government ...	...	...	4,174	...	...	...	...	...	...	4,174	...	...	4,174
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	13,498	33,155	251	...	...	...	...	...	46,904	17,120	1,761	65,785
VI.—Live and dead stock	17,042	28,257	4,571	9,628	49,356	3,387	14,012	50	2,730	1,29,033	6,339	89	1,35,461
VII.—Communications and buildings	32,794	90,915	10,295	5,147	16,779	792	19,602	121	...	1,76,445	11,582	638	1,88,665
VIII.—Demarcation, improvement, and extension of forests...	49,759	71,677	39,250	23,689	60,933	9,002	42,998	5,128	6,092	3,08,528	13,921	688	3,23,137
IX.—Miscellaneous	962	14,702	762	5,532	9,000	2,614	3,038	31	48	36,689	2,614	6	39,309
Total Conservancy and Works ...	2,45,792	6,40,025	2,35,019	3,17,743	9,08,974	32,306	88,881	5,631	8,870	24,83,241	70,529	8,154	25,61,924
B.—Establishments.													
I.—Salaries	1,28,986	2,29,454	2,30,959	1,52,186	1,94,711	21,907	61,728	7,024	26,614	10,53,569	68,697	7,415	11,29,681
II.—Travelling allowances	13,773	33,311	35,631	15,449	33,874	4,858	11,115	891	5,160	1,54,062	7,153	2,022	1,63,237
III.—Contingencies	6,058	13,422	14,661	11,635	12,663	787	3,637	408	1,845	65,116	6,606	90	71,812
Total Establishments ...	1,48,817	2,76,187	2,81,251	1,79,270	2,41,248	27,552	76,480	8,323	33,619	12,72,747	82,456	9,527	13,64,730
Grand Total of Expenditure ...	3,94,609	9,16,212	5,16,270	4,97,013	11,50,222	59,858	1,65,361	13,954	42,489	37,55,988	1,52,985	17,681	39,26,654
Surplus ...	2,39,125	1,49,882	1,72,038	6,75,871	10,81,581	40,506	692	...	...	23,07,318	80,526	936	23,88,780
Deficit ...	...	...	...	...	..	...	...	9,888	42,489	...	...	...	...

STATEMENT II.

Financial Results of Forest Administration in the Provinces immediately under the Government of India for the year 1881-82.

Province.	Timber and other produce removed from the forests by Government agency.			Other Revenue.			Formation, Protection, and Improvement of Forests.	Total.			
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus.	Charges.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,88,897	1,56,181	+32,716	4,44,837	1,12,160	3,32,677	1,26,268	6,33,734	3,94,609	2,39,125	...
North-Western Provinces and Oudh	4,29,731	5,15,975	−86,244	6,36,363	1,61,278	4,75,085	2,38,959	10,66,094	9,16,212	1,49,882	...
Punjab	3,78,903	2,71,120	+1,07,783	3,09,405	1,00,710	2,08,695	1,44,440	6,88,308	5,16,270	1,72,038	...
Central Provinces	3,10,176	1,38,313	+1,71,863	8,62,708	2,21,152	6,41,556	1,37,548	11,72,884	4,97,013	6,75,871	...
British Burma	17,15,287	9,44,460	+7,70,827	5,16,516	70,441	4,46,075	1,35,321	22,31,803	11,50,222	10,81,581	...
Coorg	37,120	29,346	+7,774	63,244	7,470	55,774	23,042	1,00,364	59,858	40,506	...
Assam	23,894	9,157	+14,737	1,42,159	36,944	1,05,215	1,19,260	1,66,053	1,65,361	692	...
Ajmere	505	2,406	−1,901	3,561	2,137	1,424	9,411	4,066	13,954	...	9,888
Forest Survey	...	...	...	...	...	...	42,489	...	42,489	...	42,489
Total ...	30,84,513	20,66,958	+10,17,555	29,78,793	7,12,292	22,66,501	9,76,738	60,63,306	37,55,988	23,07,318	...
Berar	3,629	284	+3,345	2,29,882	1,05,629	1,24,253	47,072	2,33,511	1,52,985	80,526	...
Biluchistan	8,817	7,354	+1,463	9,800	4,142	5,658	6,185	18,617	17,681	936	...
Grand Total ...	30,96,959	20,74,596	+10,22,363	32,18,475	8,22,063	23,96,412	10,29,995	63,15,434	39,26,654	23,88,780	...

STATEMENT III.

Receipts and Charges of the Forest Department throughout India during the eighteen years from 1864-65 *to* 1881-82.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,49,851	1,16,633	1,85,933	1,98,274	2,22,401	4,26,228	4,16,024	4,49,524	5,61,340	6,33,734
North-Western Provinces and Oudh ...	6,93,644	7,70,370	7,79,200	5,77,644	7,85,211	8,33,077	4,25,257	11,70,901	19,39,114	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,229	10,66,094
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754	6,83,710	5,00,620	6,49,819	6,71,679	6,88,308
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367	6,61,779	7,25,335	6,61,326	6,83,910	8,52,862	10,06,723	8,50,139	11,72,884
British Burma	9,36,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468	16,03,023	11,37,562	11,80,190	15,16,613	22,31,803
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079	58,012	1,07,457	75,929	1,01,015	52,020	1,01,786	87,857	1,00,364
Ajmere	...	...	...	...	...	...	...	...	24	508	203	410	905	3,002	1,241	1,861	1,124	4,066
Assam	...	...	...	...	...	...	...	...	...	62,726	64,749	1,07,302	81,568	1,34,326	1,61,779	1,64,336	1,68,997	1,66,053
Surveys	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	38	272	...
Total ...	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151	42,43,710	50,87,896	43,43,022	48,38,322	42,48,926	45,94,243	48,00,250	60,63,306
Madras	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,39,762	4,18,882	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312	4,04,164	3,83,694	3,65,750	5,01,839	5,06,710
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,88,090	12,23,995	12,48,672	12,26,658	12,61,529	11,81,893	15,24,712	15,22,807	18,28,089
Total Revenue (British India)	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435	58,32,031	67,62,927	59,84,992	65,04,015	58,14,513	64,84,705	68,24,896	83,98,105
Hyderabad Assigned Districts ...	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,59,861	2,63,256	2,60,674	2,32,817	2,53,136	2,79,231	2,85,670	3,07,501	2,66,556	2,33,511
Biluchistan ditto ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,617
GRAND TOTAL OF REVENUE...	35,01,488	35,75,454	30,87,757	33,69,330	42,85,293	47,26,434	48,30,130	50,82,243	59,60,581	65,07,691	60,92,705	69,95,744	62,38,128	67,83,246	61,00,183	67,92,206	71,05,828	86,50,233

STATEMENT III—*continued.*

EXPENDITURE.

A.—On Conservancy and Works.

Provinces.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172	1,46,857	2,10,914	1,50,295	1,89,619	2,45,792
North-Western Provinces and Oudh ...	3,82,780	2,45,158	2,66,187	2,74,818	3,69,869	3,59,149	5,94,829	8,95,931	9,54,515	9,72,991	8,75,039	5,40,335	6,50,002	5,09,798	5,72,085	4,63,591	4,15,418	6,40,025
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,003	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330	2,58,949	2,58,952	2,20,827	2,25,277	2,35,019
Central Provinces	35,610	88,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010	1,78,513	2,40,523	1,67,334	1,78,401	2,36,029	3,58,380	3,40,386	3,17,743
British Burma	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,064	6,40,062	5,00,783	5,29,692	4,77,866	9,08,974
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493	16,453	14,671	30,542	29,956	32,306
Ajmere	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433	6,961	5,182	5,280	4,755	5,631
Assam	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005	48,954	64,519	72,157	69,209	88,881
Surveys	...	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684	10,024	10,663	8,655	7,700	8,870
Total ...	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517	18,16,459	18,73,798	18,39,419	17,60,186	24,83,241
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943	1,59,867	1,24,406	1,63,367	1,32,206	1,63,544
Bombay and Sind	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394	5,36,477	6,37,117	6,59,701	6,93,935	7,14,171
Total (British India) ...	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854	25,12,803	26,35,321	26,62,487	25,86,327	33,60,956
Hyderabad Assigned Districts ...	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506	49,715	39,544	42,352	57,356	70,529
Biluchistan „ „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,015	8,154
GRAND TOTAL ...	11,76,804	14,22,581	13,39,017	14,31,987	17,02,704	21,73,408	27,35,075	23,93,992	26,80,618	25,51,534	29,07,757	26,68,434	28,45,360	25,62,518	26,74,865	27,04,839	26,49,698	34,39,639

STATEMENT III—*continued.*

B.—On Establishments.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517	1,14,354	1,27,757	1,25,453	1,45,762	1,48,817
North-Western Provinces and Oudh ...	92,893	1,06,125	1,05,282	1,08,204	1,31,090	1,69,531	1,81,047	2,01,020	2,07,917	1,92,949	1,85,663	1,95,994	2,10,247	2,18,427	2,37,892	2,53,003	2,64,156	2,76,187
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153	2,58,217	2,64,602	2,59,849	2,70,091	2,81,251
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,14,171	1,16,546	1,15,726	1,30,240	1,21,306	1,39,277	1,57,686	1,64,193	1,55,127	1,79,270
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,82,980	2,15,754	2,17,618	2,23,798	2,34,702	2,41,248
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708	14,226	11,688	14,836	19,814	20,158	24,622	26,531	27,552
Ajmere	...	...	...	...	...	...	...	...	8,177	8,563	8,813	14,383	11,025	7,965	8,263	8,470	7,668	8,323
Assam	...	...	...	...	...	...	...	...	...	31,721	28,385	28,697	47,915	51,333	61,508	60,673	73,516	76,480
Surveys	...	...	...	...	...	...	...	...	12,875	42,852	57,614	53,859	49,820	49,684	49,662	38,222	32,635	33,619
Total of Establishment Charges ...	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799	10,74,825	11,45,146	11,58,283	12,10,188	12,72,747
TOTAL OF ALL CHARGES ...	11,00,838	10,97,346	11,55,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316	28,91,284	30,18,944	29,97,702	29,70,374	37,55,988
Madras	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,138	2,19,027	2,22,626	2,17,398	2,17,861	2,19,798	2,27,642
Bombay and Sind	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548	3,20,467	3,62,044	3,96,612	4,21,161	4,34,287
Total of Establishment Charges (British India)	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374	16,17,918	17,24,588	17,72,756	18,51,147	19,34,676
TOTAL OF ALL CHARGES (BRITISH INDIA)	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,09,616	43,37,228	41,30,721	43,59,909	44,35,243	44,37,474	52,95,632
Hyderabad Assigned Districts ...	478	8,991	13,718	16,157	27,553	58,692	38,938	38,071	37,994	41,523	45,875	48,586	54,146	60,253	67,806	68,162	71,613	82,456
Biluchistan „ „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10,401	9,527
GRAND TOTAL OF ESTABLISHMENT CHARGES	6,42,520	7,12,392	6,95,166	7,98,704	8,98,859	10,05,787	10,93,580	11,89,039	12,99,375	13,59,447	13,46,694	14,32,055	15,86,520	16,78,171	17,92,394	18,40,918	19,33,161	20,26,659
GRAND TOTAL OF ALL CHARGES	18,19,324	21,34,973	20,34,183	22,30,691	26,01,563	31,79,195	38,28,655	35,83,031	39,79,993	39,10,981	42,54,451	41,00,489	44,31,880	42,40,689	44,67,259	45,45,757	45,82,859	54,66,298

STATEMENT III—*concluded.*

SURPLUS REVENUE.

PROVINCES.	1864-65.	1865-66.	1866-67 (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531	12,94,640	22,86,840	12,51,706	19,47,038	12,29,982	15,96,541	18,29,876	23,07,318
The Presidency of Madras ...	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010	(Deficit 33,546)	(Deficit 3,724)	1,342	21,671	41,890	(Deficit 15,478)	1,49,835	1,15,524
Ditto of Bombay ...	5,42,159	2,32,556	1,73,825	3,37,108	5,86,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716	4,04,585	1,82,732	4,68,399	4,07,711	6,79,631
TOTAL NET REVENUE (BRITISH INDIA)	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094	16,68,969	27,53,311	16,47,764	23,73,294	14,54,604	20,49,462	23,87,422	31,02,473
Hyderabad Assigned Districts ...	1,890	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616	1,69,285	1,41,944	1,58,484	1,69,263	1,78,320	1,96,987	1,37,587	80,526
Biluchistan ditto ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	(Deficit 2,040)	936
GRAND TOTAL OF NET REVENUE	16,82,164	14,40,481	10,53,574	11,38,639	16,83,730	15,47,239	10,01,475	14,99,212	19,80,588	25,96,710	18,38,254	28,95,255	18,06,248	25,42,557	16,32,924	22,46,449	25,22,969	31,83,935

A. R. M.—Home Department Press—No. 255—23-7-83—350.

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REVIEW

OF THE

FOREST ADMINISTRATION

IN

BRITISH INDIA,

FOR THE YEAR

1882-83:

BY

W. SCHLICH, PH. D.,

INSPECTOR-GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

SIMLA:

GOVERNMENT CENTRAL BRANCH PRESS.

1884.

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REVIEW

OF THE

FOREST ADMINISTRATION

IN

BRITISH INDIA,

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BY

W. SCHLICH, PH. D.,

Inspector-General of Forests to the Government of India.

INTRODUCTION.

THE most remarkable feature in Indian Forest Administration is the rapid increase of the Revenue. Five years ago it amounted to 68 lakhs of rupees, and now it has risen to 104 lakhs. This proves conclusively an increasing demand on the Government forests, which is chiefly due to the destruction of private forests, brought about by—

(i) the extension of railway communication; and

(ii) the increasing prosperity of the country.

Repeated efforts have been made to ascertain the area of private forests, but the data so far available are very incomplete. In the Central Provinces the private forests amount to about 35,000 square miles, while the Government forests cover an area of close on 20,000 square miles. In Bengal the zamindars hold from 40,000 to 50,000 square miles of forest lands, while the Forest Department manages 11,754 square miles. In other provinces the Government forests exceed the private forests in area; but on the whole it seems that the latter cover a larger area than the former.

2. The private forests have for a number of years past, and, it may be said, since the occupation of India by the British, which event was conterminous with the springing up of an increased demand, been steadily reduced by indiscriminate fellings without any regard to their reproduction. In some cases the object was to clear the ground for cultivation, and in others to satisfy an ever-increasing demand for forest produce. Where railways have been constructed the forests have rapidly disappeared, not only to make room for the march of civilization, but also to supply the large requirements of the lines. Taking into consideration the special impetus which has lately been given to the construction of additional railways, the final destruction of all private forests within a reasonable distance from them may safely be predicted. The result of this change is that the requirements for forest produce, which were formerly chiefly satisfied from private forests, must, in an ever-increasing proportion, be obtained from the Government forests. Hence the rapid increase in the Revenue.

3. This state of affairs imposes additional duties upon the Officers of the Forest Department. As long as the bulk, or, at any rate, a very large proportion, of the ordinary forest produce required per annum could be obtained from private estates, and while the Government forests were in most instances worked below their capability, a simple system of management sufficed to keep the latter estates in a fair condition; but with the increase in the demand on them, and as this approaches their maximum annual yield, the system of management must become more detailed and resources must be more carefully husbanded, or else it may hereafter be found impossible to meet the demand upon the forests.

4. Forest estates are properties requiring special and peculiar treatment, and in this respect they differ widely from land under ordinary cultivation. In the case of forests the produce of a particular year cannot, as a rule, be removed at once, but has generally to be kept for many years before it becomes fit for the special purpose for which it is wanted. The Forest Officer thus becomes trustee of considerable capital, on which he may, by overworking the forest, make inroads for a long period without the fact coming to the knowledge of the Government, or becoming even apparent to himself, unless a careful account is kept of the growing stock, and sales are duly regulated with reference to the capabilities of the forest and its powers of reproduction. As regards the latter point, special care must be taken to effect a restocking of all areas cleared for the market in the shortest time practicable. Where circumstances are favourable, this may be done in the natural way; but under unfavourable circumstances, planting and sowing must be undertaken to augment the efforts of nature, in order to prevent loss of time and a reduction of the possible yield of the forest. All these things demand that a strict control should be exercised over the working of the Government forests, and this can only be done by means of working-plans, which should be prepared, at first, for the more important areas, but eventually for all forests.

5. A working-plan deals with all points connected with the management of a forest, amongst which the following are the most important; it ascertains—

(i) the stock on the ground at a particular time;

(ii) the annual increase of the stock;

(iii) the quantity of material which may be removed annually; and

(iv) it arranges for the proper and immediate restocking of all areas cleared for the supply of the market.

The degree of accuracy required in the collection of the data for a working-plan depends chiefly upon the market value of the produce and the demands made on a particular forest. Where that demand equals, or even exceeds, the possible yield, the work must be done with the greatest minuteness, and everything must be arranged so as to obtain the highest yield which the forest is capable of returning under the most careful management. Where, on the other hand, the demand is as yet below the ordinary capability of the forest, a more rough procedure may be followed. Thus a working-plan for the greater portion of the Assam forests should, for the present, be a very simple and plain document, while those for the Darjeeling, Chakrata, Kalatope, and other similarly situated forests, must be drawn up much more minutely.

6. For years past the preparation of working-plans has been encouraged. Whenever the Inspector-General of Forests has visited a province, he has generally drawn up a scheme for the working of its forests, and a number of special working-plans have also been prepared from time to time either by the Inspector-General himself or by local officers. Then as the working of the forests gradually became more detailed, owing to increased demands, special working-plans divisions were established, first in the North-Western Provinces, after that in British Burma, and lately in the Punjab. Similar divisions are about to be formed in some of the other provinces. In this manner a skilled staff will gradually be created, whose business it is to prepare, in consultation with the local officers, the working-plans for the forests in the different provinces.

7. But something more is required, namely, that the execution of the working-plans, once approved by Government, shall be ensured, and this had best be done by a central agency. For this purpose a Superintendent of Working-Plans has been sanctioned, who will now be appointed Assistant to the Inspector-General of Forests. It will be the duty of the Inspector-General and his Assistant to visit the provinces where working-plans are under preparation or revision, to advise the officers in charge of the work regarding the general lines on which it should be conducted, and, after orders have been passed on the working-plans, to watch their execution, so as to bring any unauthorized deviation to the knowledge of the Local Government.

8. Although the importance of working the Government forests on rational principles and to the greatest advantage has made itself specially felt during the last few years, it was the knowledge that this state of things must come about which induced the Government many years ago, guided by the counsels of their late Inspector-General of Forests, to procure gradually a staff of Forest Officers skilled in the science of Forestry, as practised in those European countries where rational Forestry has been part of the general administration for a long time past. Many excellent officers joined the staff of the Department when first started, who, though untrained in forestry at the outset, have done really good work for Government, and who have become thorough administrators. Indeed, of the 15 Conservators of Forests at present controlling the forest administration in the several provinces of India, not less than 11 belong to this class of Officers, and without the administrative ability which they brought to bear upon the business, it would have been impossible to build up the Department. The preliminary part of the work, the demarcation and settlement of the forest estates, approaches, however, completion, and their management according to rational principles must now be worked out in detail. Hence the necessity for a specially skilled agency. For the professional education of the superior staff arrangements were made as early as 1866, and up to date 79 Officers trained in France and Germany have joined the Department in India. It is now contemplated to make the Department to a considerable extent independent of foreign countries, and to start a Forest School in connection with the Coopers Hill Engineering College in England.

9. An equally important subject is the training of a staff of executive Officers ordinarily called Rangers. Until quite lately the executive Officers were recruited from a variety of sources. Some entered as Forest-Guards, and by hard work and elementary study, made their way up to the rank of executive Officers; but the majority of them entered through the channel of office establishments, or they were appointed direct from elementary schools or from other employment. The difficulties of obtaining an efficient staff of these Officers were very great, and they increased year by year. Under these circumstances, the Forest School at Dehra Dun was started in 1878; it commenced by giving a practical training, but a course of theoretical instruction was added in the summer of 1881. At the outset the instruction could only be given in the English language. The students of the English class must have served for at least twelve months as Foresters, and they must have passed the Entrance Examination of an Indian University. If they pass successfully through the School, they leave with the Ranger's certificate, and they are ordinarily appointed as Rangers on return to their province. The exclusion of students who are not acquainted with English was the result of necessity at the outset, which was only to be maintained until arrangements could be matured to teach also in Hindustani. A class of the latter kind is now about to be started, but as the instruction can as yet be only of a very elementary nature, this class will be one for the training of Foresters, who, after their return from the School, can qualify for promotion to the rank of Ranger by further practical service of not less than two years. Arrangements have been made to admit to the Forest School 30 students annually, and this number will be wanted to meet the ever-increasing requirements of the Department.

10. Thus arrangements have now been matured to procure a staff which can regulate the working of the forests according to rational principles and the lessons taught by forest science, and another staff of executive Officers who can be entrusted with the actual execution of the working-plans. Both classes of Officers are essential if the Department is to fulfil its mission, and it is to be

hoped that nothing will occur to interfere with the proper and suitable training of either the one or the other.

11. On the whole, forest conservancy in India is now fairly secure. This result has not been achieved without difficulties and opposition. In most cases the people had been accustomed to roam at their pleasure over the Government forest estates and to cut where they liked and in the most improvident manner. A considerable reluctance to interfere with that state of affairs existed. But as the real necessities of the case and the interests at stake became more and more manifest to the enlightened rulers of the country, it was recognized that endeavours must be made to prevent a further destruction of the forest property of the State, by regulating the use of the forests without depriving the people of the forest produce required for their domestic arrangements. After a protracted struggle these wise counsels have prevailed, and the permanent preservation of a considerable area of forest lands has now been placed beyond doubt. Forest conservancy has been recognized as an important part of the general administration of the country, and the labours of those who have struggled for this result have not been in vain. The successors of the pioneers of the Department must now do their duty by constantly improving the management of the estates which they hold in trust, and thus render them an everlasting and increasing benefit to the general community. *To derive the greatest possible benefit from these estates with the smallest possible inconvenience to the people must be the watchword of every Forest Officer in India.*

CHAPTER I.—AREA AND BOUNDARIES.

General.

12. The Government forests, which are entirely or partially under the management of the Forest Department, comprised the following areas on the 1st April 1883 :—

Province.	Area, in Square Miles.				Remarks.
	Reserved Forests.	Protected Forests.	District Forests.	Total.	
Bengal	4,322	2,325	5,107	11,754	
North-Western Provinces and Oudh ...	3,339	99	118	3,556	
Punjab	1,228	311	3,155	4,694	
Central Provinces	*19,430	...	318	19,748	* 2,593 are first class reserves, the rest second class reserves.
British Burma	3,427	...	?	†3,427	
Assam	2,177	662	6,766	9,605	
Coorg	233	...	?	233	
Ajmere	122	...	?	122	† 398 square miles are toungya areas.
Biluchistan	...	...	9	9	
	34,278	3,397	15,473	53,148	
Berar	1,389	...	2,955	4,344	
Total Bengal Presidency ...	35,667	3,397	18,428	57,492	
Madras	2,782	...	?	2,782	
Bombay	9,823	5,173	?	14,996	
Grand Total ...	48,272	8,570	18,428	75,270	

This table is not yet complete; it is hoped that it will be possible to give in the next review the areas of District Forests in Burma, Coorg, Ajmere, Madras, and Bombay. By "District Forests" are understood areas wholly or partially at the disposal of Government, which have not been constituted reserved or protected forests under the Forest Law of the province in which they are situated.

13. The totals of Reserved and Protected Forests compare as follow with those of the previous year :—

Year.	Area, in Square Miles.		
	Reserved.	Protected.	Total.
1882-83	48,272	8,570	56,842
1881-82	46,213	8,612	54,825
Increase in 1882-83	2,059	...	2,017
Decrease in „	...	42	...

The changes which have taken place during the year are distributed among the several provinces in the following manner :—

Province.	Area, in Square Miles.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	86	...	...	...	86	...
North-Western Provinces and Oudh ...	13	...	1	...	14	...
Punjab	68	...	...	...	68	...
Central Provinces	...	...	...	...	...	...
British Burma	153	...	...	...	153	...
Assam	111	...	3	...	114	...
Coorg	...	1	...	...	...	1
Ajmere	...	...	...	...	...	...
Total ...	430	...	4	...	434	...
Berar	...	5	...	...	...	5
Total Bengal Presidency ...	425	...	4	...	429	...
Madras ...	1,600	...	...	...	1,600	...
Bombay ...	34	...	...	46	...	12
Grand Total ...	2,059	...	...	42	2,017	...

The principal increase occurred in Madras, and it is due to a re-classification of the areas hitherto under the management of the Department.

14. The Reserved Forests may, according to the Law under which they were constituted, be classified as follow :—

	Square Miles.
Under the Indian Forest Act, 1878	39,703
„ „ Burma „ „ 1881	3,427
„ „ Forest Act of 1865	233
„ Local Rules, Hazara	236
„ „ „ Ajmere	122
„ „ „ Berar	1,389
„ Leases	380
	45,490
Add Madras Reserves	2,782
Total ...	48,272

The Protected Forests have all been constituted under the Indian Forest Act, 1878, as none of the other Acts or Regulations recognize a second class of demarcated State forests.

Bengal.

15. The area of the forests under the management of the Department and the changes which have taken place during the year are as follow:—

Class of Forests.	Area, in Square Miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	4,236	94	8	4,322
Protected „	2,325	.....	.....	2,325
Total ...	6,561	94	8	6,647
Add District Forests	.....	.....	.....	5,107
				11,754

The additions to the reserves were made in the Darjeeling District. The exclusions are due to corrections of areas and to the surrender of about 4 square miles in Palamow. Several additions to the reserves have been made since the close of the year under review, and further additions are contemplated.

The Protected Forests are situated in the Sundarbans and in Orissa. Those in the former district are not considered permanent forest estates, while the bulk of those in Orissa are now being converted into reserves.

16. The demarcation of the forests has received attention during the year. The following data show the work done:—

	Length of boundary, in miles.	Cost per mile, in rupees.
New demarcations	197	13
Clearing of old boundaries and repairing of boundary marks	583	9

or a total length of 780 miles of boundary cleared or repaired during the year. These operations are of great importance, as the protection and ultimate improvement of the forests depend to a large extent on judiciously selected and well defined boundaries.

North-Western Provinces and Oudh.

17. The forest area under the control of the Department has been increased by 8 square miles, in consequence of corrections (based on surveys) and of small additions. It stood as follows at the close of the year:—

Circle.	Area of Forest, in Square Miles.			
	Reserved.	Protected.	District.	Total.
Central	1,473	99	118	1,690
Oudh	1,090	.....	.....	1,090
School	776	.....	.....	776
Total in 1882-83 ...	3,339	99	118	3,556
Total in 1881-82 ...	3,331	99	118	3,548
Increase in 1882-83	8	.....	.....	8

The areas shown as District Forests are situated in the Banda District. Of these, 85 square miles are the property of Government, and it is proposed to acquire the remaining 33 square miles, now under Government control, as opportunity offers, the private owners interested in them receiving in the meantime a share in the net income.

The demarcation of the forests has received attention during the year, and is reported as nearly complete in all divisions.

Punjab.

18. The areas under the mangement of the Department and the changes made during the year are exhibited in the following statement :—

Year.	Areas, in Square Miles.			
	Reserved Forests.	Protected Forests.	District Forests.	Total.
1882-83	1,228	311	3,155	4,694
1881-82	1,160	311	3,323	4,794
Increase in 1882-83	68	.....	.....	.....
Decrease „ „	.....	.....	168	100

The increase in the area of Reserved Forests is small, and no additions have been made to the Protected Forests. The subject is, however, receiving attention, and it is hoped that the definite formation of forest estates to be permanently maintained as such, will be vigorously pushed on, so as to make the full strength of the forest staff available, at an early date, for the protection, improvement, and systematic working of the forests. The decrease of 100 square miles in the total forest area is mainly due to transfers of District Forests from the charge of the Forest Department to that of the Civil Officers.

Central Provinces.

19. The changes made during the year are as follow :—

Class of Forests.	Area, in Square Miles.		
	At the commencement of the year.	Added or excluded.	At the close of the year.
First Class Reserves	2,588	+ 5	2,593
Second „	16,842	— 5	16,837
Total Reserves ...	19,430	.....	19,430
District Forests	289	+ 29	318
Grand Total ...	19,719	+ 29	19,748

Five square miles were transferred from the second to the first class Reserves, and the District Forests were increased by 29 square miles, chiefly in consequence of resumptions and purchases in the Balaghat District. The transfers from the second to the first class Reserves are as yet insignificant; but the

Chief Commissioner has urged more vigorous action in this matter on the Conservator of Forests.

20. The boundaries of the 1st class Reserves are in fair order, but those of the 2nd class Reserves are not in a satisfactory condition. It has now been arranged to push on demarcation, and it is hoped that the Report for 1883-84 will show considerable progress in this respect. It is essential that the work should extend to the marking off, with substantial boundary marks, of all areas inside the reserves in which cultivation may be permitted.

British Burma.

21. The Burma Forest Act recognizes only one class of demarcated State forests, which are called reserves. The progress made in the constitution of such estates will be seen from the following statement :—

	Area, in Square Miles.		
	Forest area.	Toungya area.	Total.
Reserved on the 1st April 1882	2,876	398	3,274
Added during the year	153	.....	153
Total on the 1st April 1883 ...	3,029	398	3,427

This area is divided as follows between the two Circles :—

Circle.	Area, in Square Miles.		
	Forest area.	Toungya area.	Total.
Pegu	2,440	398	2,838
Tenasserim	589	.....	589
Total ...	3,029	398	3,427

In the previous year an area of 836 square miles was added to the reserves; the small extent of additions made in 1882-83 is due to the introduction of the new Forest Act, which necessitated a change of procedure. The delay was, however, only temporary, as several extensive blocks have been gazetted since the close of the year.

22. Regarding the formation of State Reserves generally it may be noticed that the estimate of 3,474 square miles made by Mr. Brandis, the late Inspector-General of Forests to the Government of India, has now been reached; but the selection of further reserves should continue as long as valuable teak areas are available, which can be reserved without inconvenience to the people, and which are not likely to be required for the extension of cultivation, especially as the proportion of reserves to the total area of the province is as yet small. In this respect it should not be overlooked that Burma is the principal source of teak timber in the world, and that it is the duty of the Government to provide for the falling off which may, after the lapse of a limited number of years, be expected to occur in the outturn of the trans-frontier teak forests.

The formation of cutch reserves has been commenced; but the area requires to be considerably increased before the permanent manufacture of cutch can be regarded as placed beyond doubt. The subject is, however, one of considerable difficulty, as most of the cutch areas which now remain are scattered amongst cultivated lands.

23. Fair progress seems to have been made in the demarcation of the reserves, but it has not been possible to obtain a clear idea of the state of the work, and it is hoped that the Report for 1883-84 will show in a tabular form the length in miles of boundaries actually demarcated and that remaining to be marked off on the ground.

Assam.

24. The changes which have occurred during the year are as follow:—

Class of Forests.	Area, in Square Miles.		
	At the commencement of the year.	Added.	At the close of the year.
Reserved Forests	2,066	111	2,177
Protected „	659	3	662
District „	5,286	1,480	6,766
Total Forest area under the management of the Department.	8,011	1,594	9,605

The principal additions to the reserved forests were made in the Kamrup and Naga Hills Districts, while the large additions to the district forests, due to corrections and further explorations, occurred in Goalpara, Kamrup, Nowgong, Sibsagar, and Cachar, those in the last-named district being beyond revenue limits.

Protected forests exist in four districts, namely:—

	Square miles.
Kamrup	3
Sibsagar	30
Lakhimpur	459
Sylhet	170
Total ...	662

It has been decided to convert the protected forests of Sylhet into reserves—a procedure which it is proposed to apply also to most of the protected forests in Lakhimpur.

25. The present reserves have a length of 725 miles of demarcated boundaries. Of these, 403 miles were cleared and 290 miles inspected by the District Forest Officers. The latter figure does not include the boundaries inspected in Lakhimpur, for which district no return has been received. It is hoped that all boundaries will in future years be kept open. The expenditure charged during the year under the corresponding head is Rs. 7,601, so that the average cost per mile cleared would appear to be about Rs. 19. This rate will doubtless be considerably reduced when all boundaries are cleared annually, and the total expenditure under this head is therefore not likely to increase.

Coorg.

26. The area of the demarcated or Government forests has been reduced from 234 to 233 square miles in consequence of corrections. No other changes have taken place. The demarcation and survey of the ghat forests are in progress, preparatory to their being added to the Government forests; during the year under review a length of 72 miles has been cleared and surveyed. The boundaries of all the eastern forests are clear, but it appears that these areas are not demarcated by boundary pillars. It has been suggested that

the erection of such pillars should receive attention at an early date, especially where the forests adjoin private lands.

Ajmere.

27. No change took place in the area of the reserves, which remains at 122 square miles. The formation of further reserves is, however, under consideration, and it is expected that the area will, for the present, be increased to 156 square miles. Some further additions may become feasible during the impending Settlement.

The boundaries are reported to be in good order, except that the pillars require re-numbering, which work it is proposed to do during the season of 1883-84.

Berar.

28. The changes in the forest areas made during the year are as follow :—

Class of Forest.	Area of Forests, in Square Miles.			
	At the commencement of the year.	At the close of the year.	Increase.	Decrease.
State Reserves	1,086	1,106	20	...
District „	308	283	...	25
Unreserved Forests	3,030	2,955	...	75
Total ...	4,424	4,344	...	80

The changes under reserved forests are principally due to the transfer of the Amdari forest from District to State reserves, and those in the unreserved forests to fluctuations in the area under cultivation. The new classification of the areas is still proceeding. The reserves constituted up to date have all been demarcated.

Madras.

29. The area of reserves existing in Madras is stated to be 2,782 square miles, and it comprises the forests which have hitherto been considered as under the more special management of the Department. Owing to the passing of the Madras Forest Act, No. V. of 1882, an entirely new classification must be made, so that the areas recorded as reserves will, for some years to come, undergo considerable changes.

Bombay.

30. The changes which occurred during the year in the areas under the control of the Forest Department are as follow :—

Class of Forests.	Area, in Square Miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	9,797	229	203	9,823
Protected „	5,219	80	126	5,173
Total ...	15,016	309	329	14,996

The areas remaining at the close of the year were distributed over the three Circles in the following manner :—

Circles.	Area, in Square Miles.		
	Reserved Forests.	Protected Forests.	Total.
Northern	7,580	1,832	9,412
Southern	1,638	3,341	4,979
Sind	605	.....	605
Total ...	9,823	5,173	14,996

31. The work of demarcation and settlement has been continued. At the close of the year 3,183 square miles had been finally disposed of in the Northern Circle and 1,538 square miles in the Southern Circle. No further enquiries appear to be necessary in the old Sind reserves, so that the total area finally disposed of amounts to 5,326 square miles. Considerable progress has been made in a large portion of the remaining areas already declared reserved and protected forests, and in areas which it is proposed to add to either one or the other of these classes of forests; but as the task is of a laborious nature, it is likely to require a few years more to complete it.

Leased Forests.

32. The area of leased forests included amongst reserves has, owing to corrections, been reduced from 402 to 380 square miles. The payments made during the year, including payments to shareholders in forests managed by Government, were as follow :—

	Rs.
North-Western Provinces and Oudh	12,826
Punjab:	36,740
Central Provinces	251
Berar	17,120
Total Bengal Presidency ...	66,937
Madras	10,835
Bombay	16,158
Grand Total ...	93,930

Cost of Demarcation.

33. The outlay on account of the demarcation of the forests was as follows :—

	Rs.
In the Bengal Presidency	61,318
„ Madras „	6,667
„ Bombay „	6,996
Total ...	74,981

Compensation for Land and Rights.

34. The undermentioned amounts were paid during the year under this head :—

	Rs.
Bengal Presidency	20,100
Madras „	12,488
Bombay „	12,930
Total ...	45,518

CHAPTER II.—SURVEYS AND WORKING-PLANS.

Surveys.

35. The operations of the Forest Survey Branch extended during the year over parts of Kumaun and Garhwal, Tehri-Garhwal, Jaunsar, and Berar, while a number of boundary pillars were surveyed and boundaries laid down in Dehra Dun and in Saharanpur. Only 75 square miles remained at the close of the year to be surveyed in Kumaun and Garhwal, so that the main body of the Branch will, for some years to come, be employed on the survey of the Melghat Taluk in Berar.

36. The outturn of work during the year comprises an area of 361 square miles plane-tabled on the scale of 4″ = 1 mile, against 265 square miles in the previous year. This favourable result is said to be chiefly due to an exceptionally healthy season. The area triangulated was 85 square miles. Eight sheets of the Kumaun and Garhwal survey were published, and one had gone to press at the close of the year. The cost per square mile estimated on the total area plane-tabled came to Rs. 94, against Rs. 104 in the preceding year; and the total cost of the Kumaun and Garhwal survey has been reduced from Rs. 116 to Rs. 112 per square mile. The total cost of the Jaunsar and Tons survey up to date is Rs. 186 per square mile, and this comparatively high rate is said to be due to some extent to the inclusion of a considerable amount of boundary and road survey work, against which no area can be shown.

37. The progress of the forest survey in British Burma, conducted by the General Survey Department of India, has so far not been satisfactory, owing to the exceptional difficulties which were met with at the commencement of the operations. It has now been decided to survey the forests on a modified 4-inch scale, which will enable the survey party to turn out about 300 square miles annually at a cost of Rs. 135 per square mile debitable to the Forest Department.

38. The General Survey Department is also surveying the Thana District in Bombay on a scale of 4″ = 1 mile. During the year 1881-82 an area of 940 square miles was topographically surveyed in Thana, at a cost of Rs. 53 per square mile, of which Rs. 20 are debited to the Forest Department. In 1882-83 an additional area of 665 square miles was surveyed. Another party has surveyed the whole of the Dangs, with the exception of Ketak Karupara, which is surrounded by Gaikwari territory. The work of mapping is in progress.

Working-Plans.

39. At the close of the year provincial working-plans divisions had been started in the North-Western Provinces and in British Burma. Since then a similar division has been established in the Punjab, and one is contemplated in Bengal. The subject of working-plans is of the utmost importance, and considerable changes in the organization of the work are about to be initiated, which will be recorded in the next Review. In the meantime the work is progressing in the above-mentioned provinces.

CHAPTER III.—PROTECTION AND IMPROVEMENT.

1.—GENERAL PROTECTION.

40. In the Reviews of past years the numbers of persons prosecuted for breaches of the Forest Law have generally been given. Of late years, however, a very large proportion of such breaches have been compounded under the

Forest Law; hence a somewhat different classification must now be introduced. The cases which occurred during the year were as follow :—

Province.	Number of new Cases during the Year.			Proportion of convictions to total number of cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
Bengal	134	1,069	1,203	70
North-Western Provinces and Oudh ...	141	436	577	84
Punjab	903	?	?	75
Central Provinces	635	8,921	9,556	87
British Burma	120	?	?	83
Assam	50	?	?	75
Coorg	13	.....	13	91
Ajmere	62	.....	62	87
Biluchistan	10	.....	10	70
Total ...	2,068	.....	.....	80
Berar	437	.....	437	86
Total Bengal Presidency ...	2,505	.....	.....	81
Madras	746	.....	746	83
Bombay	1,979	?	?	73
Grand Total ...	5,230	.....	.....	78

As the numbers of cases compounded have not been given for all provinces, it is difficult to criticise the figures with any advantage. It is hoped that the Reports for 1883-84 will be complete in this respect.

41. The percentage of convictions obtained in the regular courts, amounting to 78 per cent. of the cases decided, is satisfactory. The number of cases taken into court in the Bengal Presidency is considerably lower than in the preceding year.

Bengal.

42. The total number of cases is distributed as follows amongst the divisions :—

Divisions.	Number of Cases		
	Taken into Court.	Compounded.	Total.
Sundarbans	30	950	980
Teesta	6	82	88
Darjeeling	19	37	56
Orissa (Koordah)	55	...	55
Kurseong	10	...	10
Chittagong	7	...	7
Jalpaiguri	5	...	5
Buxa	1	...	1
Chota Nagpore	1	...	1
Total ...	134	1,069	1,203

The bulk of the offences occurred in the Sundarbans, and next come the two hill divisions of Teesta and Darjeeling, then Koordah in Orissa. The cases

in the other divisions are very few. On the whole, about one offence for every ten square miles of forest under the management of the Department has been recorded, which must be considered very moderate.

North-Western Provinces and Oudh.

43. The cases of breaches of the forest rules which occurred during the year were distributed among the three circles as follow :—

Circle.	Number of Cases		
	Taken into Court.	Compounded	Total.
Central	60	386	446
Oudh	63	3	66
School	18	47	65
Total ...	141	436	577

The total number of cases during the year under review represents one offence for every six square miles of forest under the control of the Department. The great majority of the cases are reported to have been of a petty nature.

Punjab.

44. The number of prosecutions on account of the breaches of the forest rules rose from 710 in the previous year to 903 in the year under review; but as the numbers of cases compounded by Forest Officers in these years have not been given, it is impossible to draw any conclusions from the above figures.

Central Provinces.

45. The breaches of the forest rules brought to notice during the year are as follow :—

Class of Reserves.	Number of Cases		
	Taken into Court.	Compounded.	Total
First Class Reserves	30	467	497
Second „	605	8,454	9,059
Total in 1882-83 ...	635	8,921	9,556
Total in 1881-82 ...	800	8,428	9,228
Increase in 1882-83	.....	493	328
Decrease „ „	165	.....	.....

A less number of cases was taken into court, but more were compounded, while the total number shows a slight increase, which appears to be due to the submission of more complete returns than in the previous year. On the whole, one forest offence has been committed in every two square miles of forest under the control of the Department. The results of forest protection during the year are considered satisfactory.

British Burma.

46. Only 120 cases of breaches of the forest rules were taken into court, which, considering the forest area, is a very small number.

Assam.

47. During the year under review 50 cases of breaches of the forest rules were taken into court, as compared with 37 in the previous year. The number of cases compounded under section 67 of the Forest Act has not been given. On the whole, forest offences in Assam are few in number, as the people

can draw all their ordinary requirements without payment from the District Forests. Of illicit grazing only one case occurred, while the 28 cases of unauthorized felling of trees refer mostly to timber cut for export.

Coorg.

48. The number of prosecutions for breaches of the forest rules amounted to 13, against 20 in the previous year. In ten cases convictions were obtained, one was dismissed, and two are pending. Forest offences are comparatively few in number, which is due to the fact that the people of Coorg are most liberally treated in the matter of timber and other forest produce necessary for their domestic requirements.

Ajmere.

49. The cases of breaches of the forest rules which occurred during the year numbered 62 as compared with 102 in 1881-82, while 3,736 head of cattle were impounded as against 5,815 in the previous year. The improvement in these respects is satisfactory, and is said to be due to the fact that the zamindars were sufficiently supplied with grass and wood for their actual requirements, thus obviating the necessity for their appropriating those articles in an unauthorized way.

Berar.

50. The number of prosecutions for breaches of the forest rules has increased from 369 in 1881-82 to 437 in 1882-83; but no importance is attached to this fact by the local officers, as fluctuations in this respect are always likely to occur.

2.—PROTECTION FROM FIRE.

General.

51. The subjoined table gives the areas under fire protection and the results of the year's operations:—

Province.	Area, in Square Miles.		Percentage of failures to area attempted.	Cost		Year when fire conservancy commenced.	Proportion of area under fire protection to total area of reserves, in per cent.
	Attempted.	Actually protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal	667	606	9	19	6	1872	15
North-Western Provinces and Oudh ...	937	920	2	38	11	1869	28
Punjab	29	25	14	20	6	1872	2
Central Provinces ...	1,426	1,390	3	11	3	1864	7*
British Burma ...	211	180	15	70	21	1857	6†
Assam	207	153	26	58	17	1873	10
Coorg	193	193	*Nil.*	13	4	1876	83
Ajmere	122	122	*Nil.*	5	1½	1874	100
Total ...	3,792	3,589	5	24	7	.....	11
Berar	1,034	973	6	5	1½	1870	74
Total Bengal Presidency	4,826	4,562	5	20	6	.....	14
Madras	609	569	7	18	5	1867	22
Bombay	Data incomplete.						

* This refers to the 1st and 2nd class reserves. The percentage of the 1st class reserves under fire protection amounts to 55.

† Exclusive of Toungya areas the percentage amounts to 7.

The above table shows that 14 per cent. of the area of Reserves in the Bengal Presidency are under fire protection; but if the second class reserves in the Central Provinces be omitted, the percentage is raised to 25 per cent., or one-fourth of the whole area. These data show that, although many areas are not in need of special measures, the work of fire protection must gradually increase; but it is essential that this should not be done at a faster rate than is compatible with the safety of the areas already under protection.

The Central Provinces show the largest area under protection, and next come Berar, the North-Western Provinces and Oudh, Bengal, and Madras.

Protection has been most successful during the year under review in Ajmere, Coorg, the North-Western Provinces and Oudh, and the Central Provinces, and least successful in Assam, British Burma, and the Punjab.

The cost per square mile has been highest in Burma, Assam, and the North-Western Provinces and Oudh, and lowest in Berar, Ajmere, and the Central Provinces.

52. The total results during the last five years in the Bengal Presidency are as follow:—

Year.	Area, in Square Miles.		Percentage of failures to area attempted.
	Attempted.	Actually protected.	
1878-79	3,474	2,938	15
1879-80	4,072	3,709	9
1880-81	4,465	4,194	6
1881-82	4,897	4,283	13
1882-83	4,826	4,562	5
Average ...	.....	.....	9

The average failures during the last five years amounted to 9 per cent. of the area under protection, which shows an improvement of 3 per cent. as compared with the quinquennial average shown last year.

Bengal.

53. The percentage of failures to area attempted has increased from 7 to 9 per cent. The most important failures occurred in the Jalpaiguri and Buxa divisions. In the former division 47 square miles out of a total of 154 square miles attempted were burnt, and in the latter 11 out of 165 square miles. One of the fires in Buxa was due to neglect on the part of the Ranger in temporary charge, and the other was caused by travellers, who attempted to drive away by such means a herd of wild elephants. The origin of most of the fires which occurred in the Jalpaiguri Division has not been satisfactorily explained, and it seems that the arrangements made for protection against fire are capable of improvement. It is acknowledged, however, that the season was, on the whole, unfavourable for fire protection. The success obtained in the Kurseong and Palamow divisions is satisfactory, and it is hoped that it will continue. The detailed arrangements which have been made in several divisions for camping grounds will assist in the prevention of fires, and it is hoped that the system will, at an early date, be extended to all forests which are liable to damage by fire.

North-Western Provinces and Oudh.

54. The results of fire protection in the several circles are as follow :—

Circle.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.	Cost of Area successfully protected.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pies.
Central	414	9	2	45	13
Oudh	288	3	1	32	9
School	235	5	2	33	10
Total in 1882-83... ...	937	17	2	38	11
Total in 1881-82... ...	908	87	10	40	12
Increase in 1882-83	29	...	...	...	...
Decrease „ „	...	70	8	2	1

On the whole, the results obtained in the year under review are much more favourable than those of 1881-82, though 58 fires occurred which burnt 17 square miles. Many of the fires were due to carelessness on the part of the establishments employed on line-burning. It will probably be difficult to eliminate this source of danger until a superior class of executive subordinates has been secured, who can be made responsible for such work in their respective ranges. Fires caused by travellers might be avoided or be reduced in number by the establishment of fixed camping or resting grounds at suitable distances along the frequented roads within the fire-protected areas.

Punjab.

55. Most of the forests can be protected against fire without special measures. A considerable increase has, however, taken place in the area overrun by fires. Though the total area burnt, 48 square miles, is as yet comparatively small, it is satisfactory to notice that vigorous steps are contemplated to meet the difficulty in time before the evil assumes larger dimensions.

Central Provinces.

56. The areas under fire protection were practically the same as those in the previous year, and the results are as follow :—

Class of Forests.	Area, in Square Miles.			Cost per Area successfully protected.	
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.	Per square mile, in rupees.	Per acre, in pies.
First Class Reserves	1,356	22	2	11	3
Second „	70	14	20	15	5
Total in 1882-83	1,426	36	3	11	3
Total in 1881-82	1,426	204	14	11	3

These data show that the results were much more favourable in 1882-83 than in the preceding year, while the cost per acre successfully protected was the same. On the whole, the results are very satisfactory, and it is hoped that the improvement effected during the year will be lasting.

British Burma.

57. The cost of fire protection, Rs. 70 per square mile, is very high, and the success is only moderate; moreover, the area burnt includes 228 acres of plantations. On the whole, fire protection is as yet backward in Burma, the area under protection being only 211 square miles out of a total area of forest reserves, amounting to 3,029 square miles, exclusive of toungya areas. It is hoped that this branch of forest work will receive special attention when the formation of reserves has been completed.

Assam.

58. The results of fire protection during the year, compared with those of former years, are as follow :—

Year.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.
	Attempted.	Failures.	
1879-80	145	1	1
1880-81	163	2	1
1881-82	164	66	41
1882-23	207	54	26
Average			17

These data show that the success attained during the last two years was very partial. During both years the chief failures occurred in Goalpara. The season of 1882-83 is described as unfavourable.

Coorg.

59. The results of fire protection were very satisfactory, the area burnt being only 16 acres out of 193 square miles attempted. This is a great improvement on the results of 1881-82, when as much as 62 per cent. of the area attempted was burnt. The favourable results of the year under review are said to be due to an exceptionally wet monsoon and to seasonable showers of rain which fell early in spring. It appears, however, that the general arrangements for the protection of the areas were more complete than those of the previous year.

Ajmere.

60. The whole area of reserves, 122 square miles, was under protection, and only 13 acres were burnt. Almost complete success has now been obtained for some years past.

Berar.

61. The following table exhibits the results of fire protection during the last three years :—

Year.	Area, in Square Miles.		
	Attempted.	Failures.	Proportion of failures to area attempted, in per cent.
1880-81	882	14	2
1881-82	936	72	8
1882-83	1,034	61	6

Although the results are on the whole satisfactory, it is noticed that numerous fires have again occurred in connection with the burning of the fire lines. It is hoped that the accidents caused in this manner will in future years be reduced to a minimum by a more strict supervision of the establishment employed on the work of line-burning.

Madras.

62. A fair commencement has been made to protect some of the more important forests from fire, as indicated in the following statement:—

Circle.	Area, in Square Miles.		Proportion of failures to area attempted, in per cent.	Cost of Area successfully protected.	
	Attempted.	Failures.		Per square mile, in rupees.	Per acre, in pies.
Northern	282	39	14	22	7
Southern	327	1	0·3	15	4
Total ...	609	40	7	18	5

Continued and successful fire protection in the principal catchment areas of the Madras rivers is of such importance that this branch of forest work will, no doubt, receive special attention as soon as the progress in the demarcation and settlement of reserves permits of this being done.

Bombay.

63. The returns of fire protection in Bombay are incomplete. It is hoped that future reports will give an accurate account of this branch of forest work.

3.—REPRODUCTION OF THE FORESTS.

General.

64. Owing to the vast extent of the Indian forests and the high cost of artificial operations, the natural system of reproduction must be chiefly relied on; that is to say, the forests must be properly protected, fires kept out, and, whenever necessary, certain areas must be closed against grazing, either altogether or for certain seasons of the year, until the young growth in the areas under reproduction is no longer liable to be injured by cattle. In many instances, however, natural reproduction will have to be assisted by sowing and planting, if the duration of reproduction is not to be indefinitely prolonged. Where seed trees are wanting, and where the introduction of new species is desired, artificial reproduction must, under any circumstances, be resorted to. Under these circumstances, it will always be difficult to classify the reproductive works. An attempt should, however, be made in future Annual Reports to do this in as satisfactory a manner as the circumstances of each province will permit.

65. The remarks on natural reproduction recorded in the reports for 1882-83 are, as a rule, of too general a description to be of much use. In future reports this subject might usefully be dealt with in detail, by recording the progress made in each closed block. Closing against grazing and fire conservancy are expensive and often necessitate the enforcement of restrictions on the people, and it is essential that the results of these measures should be ascertained

and recorded in detail, to enable the Government to judge how far they have led to results which are commensurate with the means adopted, and how far artificial reproduction is necessary in each case where natural means have failed, or are unlikely to accomplish the re-stocking of the areas under reproduction within a reasonable time.

66. The area of plantations may be seen from the following table:—

Province.	Area, in Acres.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,005	434	.....	2,439
North-Western Provinces and Oudh ...	3,330	281	.....	3,611
Punjab	16,201	188	.....	16,389
Central Provinces	Not given.			
British Burma	10,100	1,121	.....	11,221
Assam	1,151	111	.....	1,262
Coorg	437	152	.....	589
Ajmere	413	.....	58	355
Biluchistan	13	8	.....	21
Total ...	33,650	2,237	.....	35,887
Berar	1,409	901	.....	2,310
Total Bengal Presidency ...	35,059	3,138	.....	38,197
Madras	.....	.....	.....	62,949
Bombay	Not given.			
Grand Total ...	.....	.....	.....	101,146

It was the practice in former years to give the expenditure incurred on plantations, but some of the areas have already yielded large returns, the value of which cannot be gathered from the provincial reports. Under these circumstances, it would be misleading to give the expenditure only, and the column in question will be omitted until it is possible to give also the receipts.

67. The largest amount of actual plantation work has been done in Madras and next in the Punjab, while the *toungya* teak plantations in Burma are now being so rapidly extended that the total area planted in that province is likely to surpass, at an early date, the area of plantations in the Punjab. In Bombay a great deal of sowing is done to assist natural reproduction, but these operations cannot be shown in the above table.

Bengal.

68. The information given in the report regarding natural reproduction is scanty, but it is satisfactory to notice that the Conservator and his staff take, on the whole, a hopeful view of the matter. The results of artificial reproduction are as follow:—

	Area, in Acres.		
	At the commencement of the year.	Added during the year.	At the close of the year.
Regular plantations	1,215	164	1,379
Other cultural operations	790	270	1,060
Total for 1882-83	2,005	434	2,439
Total for 1881-82	1,207	798	2,005

The extensions made during the year comprise 96 acres of upper hill forest and 40 acres of bamboos for the supply of the station of Darjeeling, 69 acres in Kurseong, 207 acres in Buxa, and 22 acres in Chittagong. Except in the latter division, the planting was all successful, which is said to be chiefly due to the fact that it is done in lines, while the intermediate jungle is left intact, and thus renders a certain amount of protection to the young plants. The partial failure in Chittagong was due to an unfavourable monsoon.

North-Western Provinces and Oudh.

69. The progress made during the year under review in artificial reproduction is as follows :—

Circle.	Areas planted, in Acres.		
	At the beginning of the year.	Added during the year.	At the close of the year.
Central	1,178	16	1,194
Oudh	791	181	972
School	1,361	84	1,445
Total ...	3,330	281	3,611

Much detailed information on this subject is given in the reports. The most important operations are the rearing of deodar in the School Circle, of sissu in Oudh, and of fruit and hill timber trees in the Central Circle.

Punjab.

70. The areas dealt with artificially, compared with the corresponding figures of the previous year, are as follow :—

Year.	Areas planted, in Acres.		
	Regular plantations.	Other cultural operations.	Total.
1882-83	15,324	1,065	16,389
1881-82	15,448	753	16,201
Increase in 1882-83	.....	312	188
Decrease „ „	124	.....	.....

The decrease under regular plantations is due to fellings and to the action of floods.

The successful rearing of deodar in Kulu and the efforts made to restock the Pabbi Reserve under very adverse conditions have been specially noticed.

British Burma.

71. The following table exhibits the progress made in planting operations during the year :—

	Area planted, in Acres.			Cost, in Rupees.	
	At the commencement of the year.	Added during the year.	Total.	Total from the commencement.	Per acre.
Regular plantations	3,564	21	3,585	3,24,001	90
Successful toungya plantations	3,886	651	4,537	42,346	9
Indifferently stocked toungya plantations and other cultural operations.	2,650	449	3,099	24,853	8
Total ...	10,100	1,121	11,221	3,91,200	35

Owing to a re-classification of the areas since last year, the entries in the first column do not agree with those shown at the close of 1881-82. The additions made during the year, though considerable, are less than those of the previous year. It is noticed that a commencement has been made to reproduce cutch in toungyas, and that the sowing with teak of areas on which the bamboos had died has proved a success. It is hoped that planting operations in the Tenasserim Circle will soon prove as successful as those in the Pegu Circle.

Assam.

72. No mention is made in the Report of natural reproduction. The progress made in planting is as follows :—

	Area planted, in Acres.			Cost, in Rupees.	
	In previous years.	During the year 1882-83.	Total.	Total.	Per Acre.
Regular plantations	1,113	89	1,202	96,581	80
Other cultural operations	38	22	60	3,751	63
Total ...	1,151	111	1,262	100,332	80

The additions consist of 90 acres of rubber plantations in the Darrang District and of 22 acres of ajhar and nahor plantations in the Nambor Forest (Sibsagar Division), while 1 acre of cinchona plantation in the Khasi and Jaintia Hills was struck off. The planting operations are reported as successful. Arranged according to species, the areas stand thus :—

	Acres.
Caoutchouc plantations	1,002
Teak „	170
Other „	30
Sowings of Nahor and Ajhar	60
Total ...	1,262

73. In the orders of the Government of India on the report for 1880-81, further extensions of the Charduar rubber plantation in the Darrang and Nowgong Division were suggested, and it is satisfactory to notice that an extension of 100 acres during each of the next two years has been sanctioned by the Chief Commissioner. Considering that the Department has now mastered the art of planting the *Ficus elastica*, and that the estimated cost per acre is put down at Rs. 29 only, it is advisable that these plantings should be conducted on a somewhat larger scale than 100 acres per annum. Under any circumstances, the work should be steadily continued for a number of years to come, and it may be worth while to make some further experiments in growing the rubber plant as an epiphyte. The present rubber plantations are on low land, and it appears advisable to make some of the extensions on somewhat higher ground, so as to ascertain in which locality the yield is greatest.

Coorg.

74. The progress made in planting operations will be seen from the following statement :—

	Area planted, in Acres.		
	At the beginning of the year.	Added.	Total.
Teak plantations	248	55	303
Sandalwood „	114	57	171
Fuel „	45	30	75
Total ...	407	142	549
Other cultural operations	30	10	40
Grand Total ...	437	152	589

In the year 1881-82 the planting was not successful, chiefly owing to a scanty rainfall. During the year under review, on the other hand, the operations suffered from an abnormally heavy monsoon, which caused several nurseries to be flooded, resulting in a scarcity of seedlings for transplanting. On the whole, however, the additions are of fair extent, and the greater part of them are reported to be fully stocked.

Ajmere.

75. It has not been shown in the Report what progress the natural reproduction of the forests has made. Small areas cut over in previous years have, on the whole, been fairly well restocked by coppice shoots. No new plantations were made during the year, but 58 acres were struck off the returns as failures, the area (including nurseries) which now remains amounting to 355 acres. About 56 maunds of various seeds were sown during the year, but the results were not satisfactory, as the seeds did not in all instances germinate, and many of the seedlings which came up were damaged by winter frost and summer heat.

Berar.

76. The cultural operations have extended over 901 acres, which have been sown with the seed of various trees in ploughed strips, 3 feet wide and 15 feet apart, the intervening spaces being also sown broadcast. In addition, 8,000 pounds of teak seed were sown broadcast in the Gugamal Reserve. It will be interesting to learn the results of this rough method of propagating teak, as similar experiments made in the forests of the Central Provinces have not led to satisfactory results.

Madras.

77. In plantation work considerable progress had been made in past years, and it is understood that the following areas were stocked at the close of 1882-83:—

	Acres.
In the Northern Circle	19,212
„ Southern „	43,737
Total ...	62,949

This area is much larger than that planted in any other province of British India. Some of the plantations, as, for instance, the Nilambur Teak Plantations and others, have already yielded large returns. The Conservator of Forests of the Southern Circle has attempted to show the regular plantations separately from other cultural operations, and the Conservator of the Northern Circle has separately recorded the topes. It would be an advantage if a uniform classification for both Circles was attempted in the Reports for 1883-84.

Bombay.

78. The data contained in the Reports of the three Circles of the Bombay Presidency are wanting in precision. Very extensive broadcast sowings are made annually, especially in the Northern Circle, with fair results. The systems of dibbling, pitting, and sowing on ploughed land have also been found successful. Regular planting works were executed, but, in the absence of tables showing the areas stocked, it is not possible to detail the results.

4.—COMMUNICATIONS AND BUILDINGS.

79. The outlay under this head during the year is as follows :—

Province.	Roads and bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	9,506	10,045	53	19,604
North-Western Provinces and Oudh	57,152	45,514	3,516	1,06,182
Punjab	5,488	9,519	150	15,157
Central Provinces	563	1,588	849	3,000
British Burma	1,321	17,389	8,411	27,121
Assam	3,926	13,287	60	17,273
Coorg	839	499	.....	1,338
Ajmere	.....	610	.....	610
Biluchistan	.....	.....	.....	.....
Forest Survey	.....	.....	.....	.....
Total ...	78,795	98,451	13,039	1,90,285
Berar	7,438	1,150	193	8,781
Total Bengal Presidency ...	86,233	99,601	13,232	1,99,066
Madras	1,332	4,166	447	5,945
Bombay	22,053	9,367	651	32,071
Grand Total ...	1,09,618	1,13,134	14,330	2,37,082

80. The totals for the Bengal Presidency compare as follow with those of the four previous years :—

	Rs.
1878-79	1,21,823
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066
Average per annum ...	1,62,686

The expenditure under these heads has risen considerably of late years. In the North-Western Provinces and Oudh more than a lakh of rupees has been expended during the year under review, of which Rs. 45,514 are debited under Buildings. Rest-houses are essential, but the construction of expensive houses in the middle of the forests should not be overdone. Ordinarily one comfortable house, if necessary double storied, in each charge would be required as forest head-quarters ; the others should be structures of a simple and inexpensive description.

5.—SUMMARY OF EXPENDITURE ON DEMARCATION AND IMPROVEMENT OF FORESTS.

81. The expenditure under these heads during the year is as follows :—

Province.	Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	7,793	16,220	144	11,045	12,524	1,062	48,788
North-Western Provinces and Oudh... ...	9,269	155	1,630	12,081	34,093	7,937	65,165
Punjab	22,118	607	44	27,809	689	1,618	52,885
Central Provinces ...	2,427	650	1,848	632	13,816	4,271	23,644
British Burma ...	9,362	956	6,709	27,268	11,209	163	55,667
Assam	7,601	1,012	4,322	10,657	8,707	7,463	39,762
Coorg	1,318	235	687	13,468	2,544	1	18,253
Ajmere	6	...	1	1,757	575	395	2,734
Biluchistan	190	...	...	90	...	...	280
Forest Survey ...	...	...	6,425	...	...	...	6,425
Total...	60,084	19,835	21,810	1,04,807	84,157	22,910	3,13,603
Berar	1,234	265	5,389	997	5,124	1,092	14,101
Total Bengal Presidency...	61,318	20,100	27,199	1,05,804	89,281	24,002	3,27,704
Madras	6,667	12,488	578	79,583	9,856	53,812	1,62,984
Bombay	6,996	12,930	28,836	14,586	2,348	1,67,896	2,33,592
Grand Total...	74,981	45,518	56,613	1,99,973	1,01,485	2,45,710	7,24,280

82. The following data show the expenditure in the Bengal Presidency compared with the four previous years :—

	Rs.
1878-79	2,98,962
1879-80	2,55,647
1880-81	2,66,925
1881-82	3,22,449
1882-83	3,27,704

The increase which has taken place since 1878-79 is very moderate.

CHAPTER IV.—YIELD AND FINANCIAL RESULTS.

General.

83. The details of the financial results are exhibited in Statements I, II, and III appended to this Review.

The receipts and surplus of the various provinces during the year under review, arranged according to the total amount of revenue, are as follow :—

No.	Province.	Total Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue, in percent.
		Rs.	Rs.	Rs.	
1	British Burma	25,03,894	12,74,935	...	51
2	Bombay	20,90,353	8,32,594	...	40
3	North-Western Provinces and Oudh	10,13,403	1,74,378	...	17
4	Central Provinces	9,77,647	5,65,399	...	58
5	Madras	9,06,442	2,61,577	...	29
6	Punjab	7,66,710	2,05,959	...	27
7	Bengal	6,93,959	3,11,775	...	45
8	Berar	2,87,043	1,37,011	...	48
9	Assam	2,48,605	76,782	...	31
10	Coorg	1,38,022	73,240	...	53
11	Ajmere	7,126	...	4,158	...
12	Biluchistan	5,039	...	6,922	...
13	Forest Survey	348	...	41,247	...
	Total ...	96,33,591	38,61,323	...	40

84. Burma still stands first as regards gross revenue and surplus; indeed, there has been, owing to the favourable prices obtained for teak, a further considerable improvement in both, as compared with the previous year, the receipts having increased by about three lakhs and the surplus by two lakhs. In Bombay also a considerable improvement has taken place, owing to an enhanced demand for produce, while smaller advancements have been effected in the Punjab, Bengal, Assam, and Berar. Madras, which stood seventh on the list for 1881-82, has now advanced to the fifth place, chiefly owing to the amalgamation of the Jungle Conservancy with the Forest Department. In the Central Provinces a considerable falling off has occurred, which is due to reductions in the departmental operations. The changes in the North-Western Provinces and Oudh are small, the receipts being slightly lower and the surplus somewhat higher than in the previous year.

85. The total forest revenue in the year under review amounted to 96 lakhs of rupees. According to the latest figures for the year 1883-84, the receipts have risen to 104 lakhs, which is a further increase of 8 lakhs as compared with 1882-83.

The proportion of the surplus to the gross receipts in 1882-83 is 40 per cent., as compared with 37 per cent. in the year 1881-82.

86. The surplus revenue has shown a steady increase during the last five years, as may be seen from the following figures :—

Year.	British Territory.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1878-79	12,29,982	41,890	1,82,732	14,54,604	1,78,320	16,32,924
1879-80	15,96,541	*Def.* 15,478	4,68,399	20,49,462	1,96,987	22,46,449
1880-81	18,27,836	1,49,835	4,07,711	23,85,382	1,37,587	25,22,969
1881-82	23,08,254	1,15,524	6,79,631	31,03,409	80,526	31,83,935
1882-83	26,30,141	2,61,577	8,32,594	37,24,312	1,37,011	38,61,323

Bengal.

87. The yield of the reserved forests during the year in timber and fuel is as follows :—

	Quantities removed, in Cubic Feet (Solid).				
	Timber.	Fuel.	Total.	Per square mile.	Per acre.
By Government agency	172,964	274,001	446,965	...	...
By private agency	6,579,543	12,171,032	18,750,575	...	...
Free grants	9,730	.....	9,730	...	...
Total ...	6,762,237	12,445,033	19,207,270	4,444	7

The quantities of timber and fuel removed from the protected and district forests without payment cannot be given, but those on which revenue has been paid are as follow :—

	Cubic feet of solid wood.
Timber	511,891
Fuel	1,263,933
Total ...	1,775,824

As this is the first time that a fairly accurate estimate of the total outturn has been made, it will not be possible to compare the data for 1882-83 in detail with those of former years. It appears, however, that the yield has increased during the year by about two millions of cubic feet.

88. Of minor produce, the following articles may be mentioned as having been removed from the forests :—

Articles.	From Reserves.	From Protected and District Forests.	Total.
Bamboos	4,032,925 pieces.	13,143,550 pieces.	17,176,475 pieces.
Canes	17,642 maunds.	34,537 maunds.	52,179 maunds.
Grass	258,854 „	15,155 „	274,009 „
Golpatta	3,505,665 „	8,650 „	3,514,315 „
Hental	2,150 „	84,925 „	87,075 „
Shells	122,220 „	36,975 „	159,195 „
Wax and honey	2,778 „	2,391 „	5,169 „

The quantities given under protected and district forests are only those which have been paid for.

89. The financial results compare as follow with those of the previous year :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	6,93,959	3,82,184	3,11,775
1881-82	6,33,734	3,94,609	2,39,125
Increase	60,225	.....	72,650
Decrease	.....	12,425	.....

The revenue has been increased and the charges reduced, so that the surplus is more by Rs. 72,650 than that of the previous year. The receipts have steadily risen during the last ten years, and there is every prospect that they will continue to increase.

90. Arranged under the main heads of Receipts and Charges, the financial results are as follow :—

	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
Departmental operations	1,58,131	1,41,337	16,794	.....
Other revenue	5,35,828	1,06,458	4,29,370	.....
Formation, protection, and improvement of forests ...	.....	1,34,389	.....	1,34,389
Total ...	6,93,959	3,82,184	3,11,775	.....

The surplus derived from departmental operations is small, but it is still higher, per cubic foot of wood removed, than that obtained by the sale of produce removed from the forests by purchasers.

The departmental operations are being carried on in the Sub-Himalayan divisions, while in the others nearly all material is removed by private agency. In the former, successful efforts have been made of late to substitute private agency for departmental working, and, if this can be done without a serious sacrifice of revenue and without defeating the objects of forest conservancy, it should be encouraged. A great improvement is apparent in the arrangements made for the working of the Kurseong and Darjeeling divisions.

91. The subjoined table exhibits the distribution of Receipts and Surplus amongst the different classes of forests :—

Class of Forests.	Amounts shown in the Accounts of the Department.		Area under the management of the Department	Revenue, per Square Mile.		
	Receipts.	Surplus.		Gross.	Net.	
					1882-83.	1881-82.
	Rs.	Rs.	Sq. miles.	Rs.	Rs.	Rs.
Reserved Forests	5,92,793	2,48,892	4,322	137	58	42
Protected „	23,565	5,451	1,925	12	3	5
Other „	77,601	57,432	5,107	15	11	10
Total ...	6,93,959	3,11,775	11,354	61	28	21

The net revenue per square mile of reserved forests has risen from Rs. 42 to Rs. 58. Calculated for the whole forest area under the Department, the net revenue has risen from Rs. 21 to Rs. 28 per square mile, which is satisfactory.

North-Western Provinces and Oudh.

92. The numbers of trees of all kinds felled during the year, with their cubical contents, are shown in the subjoined table :—

Circle.	Number of Trees felled.	Contents, in Cubic Feet.	
		Total.	Per tree.
Central	60,749	635,375	10
Oudh	1,325,655	1,986,176	1·5
School	14,294	1,059,953	74
Total in 1882-83	1,400,698	3,681,504	2·6
Total in 1881-82	1,150,105	3,676,424	3·2
Increase in 1882-83	250,593	5,080	.....
Decrease „ „	.....	.....	0·6

93. The total outturn or yield of the forests in the Oudh Circle, which has been given in a uniform measure, is as follows :—

	Cubic feet.
Timber, saplings and poles	1,986,176
Fuel	317,152
Bamboos	100
Total ...	2,303,428

This yield is equivalent to 4½ cubic feet per acre of tree forest. In future Reports it may be found practicable to give the yield in the same manner for the other Circles.

94. The selection fellings made during the year by departmental agency, comprised in the above data, are as follow :—

Circle.	Number of Trees.	Contents, in Cubic Feet.	
		Total.	Per tree.
Central	25,898	313,325	12
Oudh	16,942	676,855	40
School	1,898	271,709	143
Total in 1882-83	44,738	1,261,889	28
Total in 1881-82	31,485	1,001,482	32
Increase in 1882-83	13,253	260,407	.....
Decrease „ „	.....	.....	4

95. By arranging the trees cut in 1882-83 according to species, the following table has been obtained :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other Conifers.	Oak.	Miscellaneous.	Total.
Central	1,922	1,086	...	...	6,262	453	16,175	25,898
Oudh	16,725	119	98	...	...	...	...	16,942
School	46	...	...	770	745	331	6	1,898
Total ...	18,693	1,205	98	770	7,007	784	16,181	44,738

96. The quantities of timber and of the other principal items of produce cut and collected by Government agency are as follow :—

Circle.	Timber.	Firewood.	Charcoal.	Bamboos.
	Cubic feet.	Maunds.	Maunds.	Number.
Central	174,393	92,900	8,066	1,156,939
Oudh	999,986	.....	66	.....
School	88,565	28,257	1,110	.....
Total in 1882-83	1,262,944	121,157	9,242	1,156,939
Total in 1881-82	702,701	180,587	9,159	1,248,985
Increase in 1882-83	560,243	.....	83	.....
Decrease „ „	.....	59,430	.....	92,046

A considerable increase has taken place in the departmental timber works, owing to a demand for railway sleepers, in consequence of which the Conservator of Forests in Oudh cut 14,287 crooked and otherwise inferior sal trees which were found unsuitable for long scantlings. Of this number, 8,712 trees were cut in Kheri, 4,581 in Gorakhpur, 987 in Bahraich, and 7 in Gonda.

97. The following table exhibits the principal items of material removed from the forests by consumers and purchasers :—

Circle.	Timber.	Firewood.	Charcoal.	Bamboos.
	Cubic feet.	Maunds.	Maunds.	Number.
Central	448,596	276,763	2,057	19,124,788
Oudh	248,778	318,464	32,172	232
School	284,883	230,993	818	1,852,460
Total ...	982,257	826,220	35,047	20,977,480

These data are only approximately correct.

98. The free grants of timber to villagers and others are as follow :—

	Cubic feet.
Central Circle	157,391
Oudh „	464,716
School „	585,208
Total ...	1,207,315

99. The subjoined table gives the Receipts and Charges of the three Circles during the year under review :—

Circle.	Receipts.	Charges.	Surplus or Deficit.	
			1882-83.	1881-82.
	Rs.	Rs.	Rs.	Rs.
Central	4,14,003	2,86,648	+1,27,355	+1,99,145
Oudh	3,84,430	2,88,707	+ 95,723	+ 86,639
School	2,14,970	2,63,670	— 48,700	—1,35,902
Total of 1882-83	10,13,403	8,39,025	+1,74,378	.....
Total of 1881-82	10,66,094	9,16,212	+1,49,882	.....
Increase in 1882-83	.....	.....	24,496	...
Decrease „ „	52,691	77,187	.....	...

The total financial results of the year are slightly more favourable than those of 1881-82, but they are not equal to those of former years. The falling off in the surplus which occurred during the year under review in the Central Circle seems to have been due to a reduction in the sales from depôt and of khair timber for sugar mills. In Oudh extensive sleeper operations were commenced, but they had not at the close of the year materially affected the surplus of that Circle. In the School Circle an improvement has been effected in so far that the deficit of Rs. 1,35,902 in 1881-82 has been reduced to Rs. 48,700 in 1882-83; but a lasting improvement cannot be expected until the ordinary working expenses in the Hill Divisions have been considerably reduced.

Generally speaking, it should not be overlooked that steel sleepers are steadily rising in estimation, and that consequently the demand for wooden sleepers is likely to fall off considerably ere long. Under these circumstances the Department will probably do well to arrange the working of the forests so as to meet a steady local demand for timber and other forest produce, rather than an uncertain demand for railway sleepers.

Punjab.

100. The quantity of produce removed from the forests has considerably increased during the year under review, as will be seen from the following data :—

Description of produce.	1881-82.	1882-83.	Increase.	Decrease.
Trees and poles ... ... No.	58,507	80,212	21,705	.....
Firewood ... ... C. ft stacked.	2,169,962	4,514,332	2,344,370	.....
Charcoal ... ... Mds.	18,872	9,759	.....	9,113
Bamboos ... ... Pieces.	596,377	787,759	191,382	.....
Coal ... ... Tons.	4,292	354	.....	3,938

The increase is chiefly due to the cutting of 3,277 dead or dying deodar trees in Chamba, to increased free grants in Kangra and Rawalpindi, and to extensive removals of firewood by purchasers. The sales from Government depôts are also largely in excess of those of 1881-82, owing to considerable quantities of old timber having been brought down by exceptional floods; especially on the Jhelum River. The value of the timber thus received in depôts was, however, small. The important subject of bringing out long timber, and thus increasing the net receipts, is receiving attention. This matter was taken up as far back as 1880, and it seems due to the measures then taken that the average cubic contents per log extracted from the Bashahr forests have, during the last two years, risen from 12½ to 24½ cubic feet. The financial results in the future will in a great measure depend on the further steps which may be taken in this direction.

A fair beginning had been made in the working of the coal mines in the Salt Range, but the outturn has, during the year under review, fallen from 4,292 tons to 354 tons. This unsatisfactory result is believed to be due to the transfer of the working from the Forest Department to the Salt Department.

101. The imports of timber from foreign territory seem to have amounted to about the same quantities as in the previous year. There was an increase in the imports of 6,957 logs, but a decrease of 34,046 sleepers. The figures are as follow :—

Year.	Logs.	Sleepers.
1882-83	30,346	273,883
1881-82	23,389	307,929
Increase in 1882-83	6,957	.....
Decrease in „	.....	34,046

102. The financial results of the last ten years are as follow :—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1873-74	7,32,540	5,97,162	1,35,378	.....
1874-75	8,34,874	6,46,480	1,88,394	.....
1875-76	9,05,742	5,54,226	3,51,516	.....
1876-77	5,98,754	5,22,483	76,271	.....
1877-78	6,83,710	5,17,166	1,66,544	.....
1878-79	5,00,620	5,23,554	.....	22,934
1879-80	6,49,819	4,80,676	1,69,143	.....
1880-81	6,71,679	4,95,368	1,76,311	.....
1881-82	6,88,308	5,16,270	1,72,038	.....
1882-83	7,66,710	5,60,751	2,05,959	.....
Average	7,03,275	5,41,413	1,61,862	.....

It will be observed that the Charges have moved within narrow limits, while the Receipts have oscillated between 5 and 9 lakhs of rupees, causing considerable fluctuations in the Surplus. During the year under review the Receipts were Rs. 63,495 and the Surplus Rs. 44,097 above the average of the last ten years. The Surplus of 1882-83 is the highest which has been realized during the last seven years, but it is little more than one-half of the Surplus of 1875-76. On the whole, the financial results were least favourable in 1878-79, but a decided improvement took place in 1879-80. Since then the Surplus has risen slowly. During the year under review the financial results were specially favoured by exceptional floods in the Jhelum, and by the sale of very large quantities of fuel at the Changa Manga Plantation, representing the return of expenditure incurred in former years.

Central Provinces.

103. Only a comparatively small portion of the produce derived from the forests is removed by Government agency. During the year under review it represented 8 per cent. of the receipts of the Department, and the operations are practically restricted to the working of the Banjar Valley and Ahiri forests, which are the two best sal and teak forests in the Central Provinces. The cuttings in these are chiefly made with the view of improving the forests and bringing into the market material, much of which would otherwise not be made available. Very large quantities of forest produce are removed from the reserves by purchasers under various systems, but it has not been possible to give the quantities of timber and fuel in a uniform measure ; it is hoped that an attempt will be made to do this in the Report for 1883-84.

104. As regards the methods of working the forests in the Central Provinces, the following extract from a Report on Forest Management in the Central Provinces, by the present Inspector-General of Forests, dated the 1st June 1883, may prove interesting :—

As the Government forests of the Central Provinces, though reserves under Chapter II of the Forest Act, have to supply not only public works and industrial enterprises, but also and chiefly the ordinary requirements of the people of the country, they are worked in a variety of ways to suit the demands made on them. On the whole, the methods of working may be brought under the following four heads :—

(1) Commutation.
(2) The license system.
(3) The kham tahsil system.
(4) Government agency.

It will be useful to explain shortly what each of these systems means.

1.—The System of Commutation.

Under this system is generally understood the payment of a fixed sum per annum, in return for which the payee may supply himself with certain classes of forest produce. The payment may be fixed—

(1) by the plough;
(2) by the house;
(3) by the land revenue; or
(4) by the income of the payee.

And, again, the payment may entitle the payee to the removal of—

(*a*) any forest produce required for domestic purposes;
(*b*) any forest produce, except timber or bamboos; or
(*c*) certain articles only.

Grazing is, as a rule, not included in commutation, but must be paid for separately, according to the number of cattle sent into the Government forest. In some cases each individual takes out a grazing license, in others arrangements are made for whole villages.

Ordinarily, commutation is not granted unless the whole village commutes; but in some cases this rule has been set aside. The commutation passes are issued either by the Forest Establishment or the tahsildars, or special vendors. According to the information supplied, the system is at present in force in the following districts :—Bhandara, Balaghat, Chanda,

Seoni, Saugor, Betul, Nimar, Chhindwara, Raipur, and Sambalpur. The details of the system and the rates payable differ according to districts. The rates per annum range from 2 annas to Rs. 2 per house or plough. In some cases restrictions are enforced as regards the quantity of each kind of produce which may be removed; in others no limit has been fixed beyond what is required for ordinary domestic purposes.

As an instance of the manner in which the system is worked, the following details referring to the Bhandara District may be given. The villages which are allowed to commute are those which are situated in close proximity to the forests. The people are divided into agriculturists and non-agriculturists, who pay at the following rates :—

Agriculturists—from 4 annas to Rs. 2 for each plough, according to circumstances.

Non-agriculturists—are assessed according to their income, and are divided into the following classes :—

			Rate. Rs. A. P.
Class	I.—Incomes not exceeding	R. 50 per annum	0 2 0
„	II.— „ „	150 „	0 6 0
„	III.— „ „	300 „	0 12 0
„	IV.— „ „	500 „	1 4 0
„	V.— „ exceeding „	500 „	2 0 0

The commutation licenses are for the official year, and they are issued by the Forest Establishment. They cover the removal of the following articles :—

(1) Firewood and dead leaves.
(2) Wood for fencing and for repairing houses.
(3) Wood for ploughs.
(4) Grass for thatching.
(5) Bamboos.

Firewood comprises the following articles :—

(*a*) dead or fallen timber of the unreserved kinds;
(*b*) branches of unreserved kinds of wood;
(*c*) brushwood, thorns, and undergrowth generally.

The following kinds of trees are reserved, and cannot be cut without the permission of the Deputy Commissioner (or the Forest Officer unders his orders) :—teak, blackwood, saj, sal, bija, mohwa, and achar.

On the whole, the system of commutation has been discouraged of late years, as it leads in many instances to waste of material. It is now considered a fairer arrangement that the people should pay according to the quantities which they remove, and this has led to the license system.

2.—The License System.

Any person requiring produce from a Government forest takes out a license before proceeding to the forest, for which he pays at certain rates fixed according to circumstances in different parts of the country. The rates are fixed per cart, head, or other load, or per quantity in maunds or cubic feet. They vary considerably in different parts of the province. The following are some of the rates in force in the Chanda District :—

Forest Produce.	For the Residents of the District.	For Outsiders.
	Per cart-load.	Per cart-load.
	Rs. A. P.	Rs. A. P.
Timber	0 4 0	3 0 0
Firewood	0 1 0	0 4 0
Bamboos	0 4 0	2 8 0
Grass	0 1 0	0 4 0
Grazing.	Per head, annually.	Per head, annually.
Buffalo	0 2 0	0 3 3
Bullock or cow	0 1 0	0 2 3
Sheep or goat	0 0 3	0 0 6

To make it as easy as possible for the people to obtain the licenses, they are sold by the Forest Establishment, Postmasters, Police Officers, Tahsil Establishments, School-masters, or private individuals duly authorized. The license vendors, except those belonging to the Forest Establishment, receive a commission on the sales. The licenses are either for fixed values or they are not. The former are of two classes: one gives the details of the produce and the other only the value; in the latter case the purchaser can remove under it any produce he chooses up to the value of the license. The licenses of no fixed value show the details of the produce which may be removed under them and the amount paid.

The license system has been much elaborated in the Central Provinces, as it is the most suitable method of disposing of the forest produce, and is at the same time fair to the consumer. In some cases the description of the produce is indicated by the colour of the paper on which the license is printed; in others the license is illustrated by a picture of the produce to which it has reference, as, for instance, a man carrying a head-load of grass or a bullock carrying a load, or a cart with two bullocks and laden with grass or timber, &c. In other cases the value is indicated by printing the *fac-simile* of the coin in question on the license; for instance, a four anna piece printed on a license indicates that four annas' worth of produce may be removed under it. And, again, in other instances the value is represented by stamps affixed to the license.

The objects of all these measures and devices are—

(1) to facilitate the purchase of the licenses,

(2) to prevent the purchasers being cheated, and

(3) to facilitate the control over the produce removed; the Forest Guards are, as a rule, not able to read or write, but they know the value and purport of the licenses by the colour of the paper, *fac-similes*, &c., indicated above.

3.—The Kham Tahsil System.

A modification, though by no means an improvement, of the license system is the kham tahsil system, under which the purchaser proceeds to the forest without let or hindrance, removes the produce he requires, and pays for it, on passing out of the forest, at one of a series of stations established on the main lines of export.

The kham tahsil system, if applied to forests which it is intended to maintain permanently, has serious drawbacks, which it is not necessary to explain here, as the system is in force in one forest only, the Moharli Reserve, and as it is not intended to extend it. There were special reasons why the system was applied to the Moharli Reserve. In the first place, the exports from it form as yet only a fraction of the possible yield, and the exporters do not cut the material, but they buy it from certain people living in forest villages in the reserve, who cut and prepare the produce for sale. When the demand on the reserve has sufficiently increased to approach its possible yield, a change in the system will be called for. In the meantime, it may be mentioned that the Ranger in charge of the reserve controls the Naka Establishment.

4.—General Remarks on these three Systems.

Considering the above-mentioned three systems generally, it will be noticed that they in themselves put very little restriction on the manner in which the forests are used by the people. In order to maintain and improve the areas, certain restrictions are, however, enforced. It has been shown in a previous chapter that the area of the Government forests on the 1st April 1882 stood as follows:—

	Area, in square miles.
First-class reserves	2,588
Second „	16,842
Total ...	19,430
Add unreserved forests	289
Grand Total ...	19,719

In the first-class reserves certain blocks only are opened for the exercise of the commutation, license, and kham tahsil systems, while the others are under reproduction or special improvement. In some instances certain inferior species may be cut anywhere in a first-class reserve; but care is taken to give this permission only where it is not likely to lead to damage. And even in the open blocks valuable species—like teak, sal, bija, saj, blackwood, and others—may only be cut with the special sanction of the Divisional Forest Officer. Bamboos are, on the other hand, so abundant in most first-class reserves (certain areas in the northern part of the province excepted) that no restrictions regarding their removal have as yet been enforced. As the demand increases, it will, no doubt, be found necessary to work even bamboo forests by rotation, so as to ensure the continued production of good healthy shoots.

In the second-class reserves working by rotation has been attempted by opening certain blocks for cutting and by closing others. This, however, refers only to a small part of the area (Seoni and Saugor Districts). The ordinary restriction which has been enforced consists in

the prohibition to cut the more valuable species, varying in number according to circumstances, without the previous sanction of the Divisional Forest Officer, or the Deputy Commissioner, as the case may be. With this simple restriction, the second-class reserves, it is believed, have not deteriorated since they were taken under protection; on the contrary, in many instances, they have even improved; but in the same degree as the Malguzari forests disappear or are reduced in yielding power, and the demand on the Government forests increases, it will be necessary to introduce additional conservancy measures. The second-class reserves will, similar to the method now followed in some of the first-class reserves, have to be divided into blocks, of which some are open for cutting, while others are closed for reproduction and improvement, until, in fact, all difference between first and second-class reserves disappears.

105. The financial results of the year are as follow:—

Class of Forests.	Receipts.	Charges.	Surplus.	
			Total.	Per square mile of Forest.
	Rs.	Rs.	Rs.	Rs.
First Class Reserves	1,87,130	1,78,879	8,251	3
Second „	7,90,517	2,33,369	557,148	33
Total of 1882-83... ...	9,77,647	4,12,248	5,65,399	29
Total of 1881-82... ...	11,72,884	4,97,013	6,75,871	35
Decrease in 1882-83	1,95,237	84,765	1,10,472	6

The falling off under both Receipts and Charges is due to a reduction of the departmental timber operations. Apart from these, the Receipts have actually increased, while the Charges are about the same as in the previous year. Although the total results do not compare favourably with those of 1881-82, the Surplus is slightly higher than the average of the last five years, and in so far the results are not unsatisfactory.

British Burma.

106. The number of trees girdled during the year is as follows:—

Circle.	Teak.			Other Trees.
	Inside Reserves.	Outside Reserves.	Total.	
Pegu	3,690	11,294	14,984	2,657
Tenasserim	1,021	1,591	2,612	3,538
Total ...	4,711	12,885	17,596	6,195

The number of teak trees girdled is 1,596 in excess of Mr. Brandis's forecast, the whole excess having occurred in the Tenasserim Circle. Sanction was given to girdle 2,500 trees outside reserves in that Circle, but, owing to a mistake on the part of the Officer entrusted with the work, 1,021 of the trees killed were standing inside the Mithawé Reserve.

It does not appear desirable to exceed Mr. Brandis's forecast until the formation and demarcation of the principal reserves in both circles have been completed, and until considerable progress in the survey and preparation of working-plans has conclusively shown that the annual yield may safely be

increased with due consideration of the fact that the forests in British Burma must ultimately be in a fit condition to make up for the reduction in imports from foreign States, which is sure to set in at no distant date.

107. The yield of the forests is given as follows :—

	Timber extracted, in Tons.		
	Teak.	Other timber.	Total.
By Government agency	40,272	8,440	48,712
By purchasers and under trade permits	3,642	32,904	36,546
Under free grants	85	8,079	8,164
By lease-holders and others	4,327	748	5,075
Total ...	48,326	50,171	98,497
Outturn of 1881-82	31,246	87,171	118,417
Increase in 1882-83	17,080	.....	.....
Decrease in „	.....	37,000	19,920

There has been an increase of 55 per cent. in the outturn of teak and a reduction of 42 per cent. in that of other woods, or a falling off in the total outturn of 17 per cent. These large fluctuations have not been satisfactorily explained in the Reports. If the high rates ruling during the year stimulated the extraction of teak, it is not understood why the extraction of other timber should at the same time have fallen off.

108. As far as can be gathered from the Reports, the following quantities of timber were imported and exported during the past two years :—

Year.	Timber imported.	Timber exported.
1881-82	154,290 tons.	133,751 tons.
1882-83	140,604 „ and 58,876 pieces.	151,151 „

There has apparently been an increase in both imports and exports. The value of the exports is estimated at Rs. 1,40,46,610.

109. The financial results of the year compare as follow with those of the previous year :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	Rs.
1882-83	25,03,894	12,28,959	12,74,935	51
1881-82	22,31,804	11,50,222	10,81,582	48
Increase in 1882-83	2,72,090	78,737	1,93,353	.....

These results are very satisfactory, especially if it is remembered that the reduction of the duty on foreign timber, from 7 per cent. to 1 per cent. and subsequently to one-half per cent. *ad valorem*, represents a loss of revenue amounting to Rs. 2,63,504. The large receipts are to a considerable extent due to the high price of teak prevailing during the year.

Assam.

110. The departmental operations have now been reduced to the extraction of the material which is required for the use of the department. During the year under review 219 trees were cut departmentally against 378 in the previous year. It is expected that all the stocks now remaining in depôts will be sold before the close of 1883-84.

111. As far as can be gathered from the Report, the following trees have been removed by purchasers from the forests in the Assam Valley Districts, including the Khasi and Jaintia Hills :—

	Sal.	Other Reserved trees.	Unreserved trees.	Total.
From Reserved Forests	9,343	636	669	10,648
„ Protected and District Forests	2,659	1,790	2,556	7,005
Total ...	12,002	2,426	3,225	17,653

In addition, certain quantities of poles, boats, and fuel have been removed, but they are given in various measures. Future Reports should give an estimate of the total quantities of wood removed from the reserved forests, and, as far as they can be ascertained, those removed from the protected and district forests.

The following quantities of timber were removed by purchasers from the Cachar forests :—

	Pieces.	Cubic feet.
In 1882-83	22,925	605,280
„ 1881-82	15,888	422,219

These figures show a considerable increase during the year under review. The quantities removed from the Sylhet forests have not been given.

It is reported that 20,447 trees, representing a value of Rs. 83,538, were made over free of charge to the Assam Railway and Trading Company under the concession granted to them.

112. The revenue realized by the sale of timber on new grants of waste land is as follows :—

Year.	Area of Land allotted for Cultivation.	Amount of Forest Revenue realized or due.	
		Total.	Per acre.
	Acres.	Rs.	Rs. A. P.
1882-83	4,246	7,438	1 12 0
1881-82	736	662	0 14 4

These data seem to indicate fresh activity in the tea industry.

113. The rubber mahals in British territory were sold for Rs. 32,792. The quantity of rubber collected cannot be given with any degree of accuracy, but it is roughly estimated at 4,178 maunds. If this should be approximately correct, Government would receive only about Rs. 8 for every maund of rubber.

An experiment has been made in the Balipara Reserve (Darrang and Nowgong Division) of tapping 50 full-sized rubber trees, with the view of ascertaining their yield under systematic management. These trees seem to have yielded during the first year on an average about 4½ seers of dry rubber per tree, which realized Rs. 5-13-1, after deducting all expenses of collecting the rubber. The results of the further tapping of these trees will be expected with interest. If the trees should be found to stand similar tappings regularly, the Balipara rubber planation will doubtless prove a remunerative investment.

The imports and exports of rubber, as far as they can be given, were as follow:—

	1882-83. Mds.	1881-82. Mds.
Imports	4,586	2,840
Exports	10,766	9,026

114. The Forest Department of Assam was separated from that of Bengal in 1873-74. Since then the financial results have been as follow:—

Year.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1873-74	62,726	50,622	12,104	.....
1874-75	64,749	59,523	5,226	.....
1875-76	1,07,302	61,884	45,418	.....
1876-77	81,568	89,920	.....	8,352
1877-78	1,34,326	1,00,287	34,039	.....
Average of first 5 years	90,134	72,447	17,687	.....
1878-79	1,61,779	1,26,027	35,752	.....
1879-80	1,64,336	1,32,830	31,506	.....
1880-81	1,68,997	1,42,725	26,272	.....
1881-82	1,66,053	1,65,361	692	.....
1882-83	2,48,605	1,71,823	76,782	.....
Average of second 5 years	1,81,954	1,47,753.	34,201	.....
Average of 10 years	1,36,044	1,10,100	25,944	.....

Taking into consideration the special difficulties against which the Department has had to contend during the first ten years of its existence, these results are certainly not unsatisfactory. The demand for forest produce is as yet considerably below the quantity which the forests can permanently yield, and, as it increases with the progress of cultivation, the Assam forest reserves will doubtless prove to be valuable Government estates.

Coorg.

115. The number of timber trees felled departmentally during the last two years is as follows:—

	Teak.	Others.	Total.
In 1882-83	494	1,186	1,680
„ 1881-82	808	741	1,549

The number of sandalwood trees cut during the year 1882-83 is 1,528.

116. The following quantities of timber were received in, and sold from, depôts:—

Year.	Timber, in Cubic Feet.				
	Brought to Depôts.			Sold in Depôts.	Sold locally.
	Teak.	Others.	Total.		
1882-83	15,972	17,988	33,960	40,388	483
1881-82	23,404	16,407	39,811	28,966	359

In addition to the above, a quantity of small pieces, bamboos, and fuel was brought to depôts and sold. On the whole, the operations were conducted on about the same scale during the two years.

The quantities of produce removed from the forests by purchasers were small, and the Deputy Conservator does not, for the present, expect any special increase in them.

117. The sandalwood operations, compared with those of previous years, are as follow :—

Year.	Amount brought to Depôts, in Tons.	Sold during the Year.		
		Number of tons.	Amount realized.	
			Total.	Per ton.
			Rs.	Rs.
1880-81	118¼	112⅔	34,324	305
1881-82	126¾	60¾	14,059	231
1882-83	117⅓	192¼	77,407	403
Total ...	362⅓	365⅓	1,25,790	344

Considerable fluctuations have occurred in the sales, according to the state of the market; but the total quantity sold during the last three years is almost the same as that brought to depôts, and the average outturn is very near the estimate of 120 tons per annum. The price per ton, which fell considerably during the previous three years, is now almost as high again as it was four years ago.

118. The financial results are as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1882-83	1,38,022	64,782	73,240
1881-82	1,00,364	59,858	40,506
Increase in 1882-83	37,658	4,924	32,734

The year under review shows a marked increase in both the gross and net revenue—an improvement which is due to the increased sales of sandalwood and the higher rates obtained for it. The receipts from the sale of timber are as yet small, and, with the view of increasing them, it is proposed to construct a tramway from Hunsur to the Nalkeri and Hatgatnad forests.

Ajmere.

119. The financial results of the year, compared with those of 1881-82, are as follow :—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1882-83	7,126	11,284	4,158
1881-82	4,066	13,954	9,888
Increase in 1882-83	3,060	.....	.....
Decrease in „	.....	2,670	5,730

The receipts were increased and the charges were less, hence a reduction of Rs. 5,730 in the deficit.

The receipts were derived from the following sources :—

		1882-83.	1881-82.
		Rs.	Rs.
Firewood and charcoal		2,472	669
Bamboos		66	.....
Grazing and grass		3,720	1,755
Minor produce		242	161
Miscellaneous		626	1,481
	Total ...	7,126	4,066

On the whole, the receipts are gradually rising, and it is expected that they will, a few years hence, equal the charges.

Berar.

120. The financial results of the year, arranged according to the different classes of forests, are as follow :—

Class of Forest.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	41,899	62,675	.....	20,776
District „	8,423	25,748	.....	17,325
Unreserved Forests	2,36,721	61,609	1,75,112	.....
Total ...	2,87,043	1,50,032	1,37,011	.....

The deficit of the State Reseves is only one-half of what it was in 1881-82, and the Conservator hopes to see it soon disappear altogether. The deficit of the District Reserves is also less than it was in 1881-82.

121. The totals of receipts and charges compare as follow with those of previous years :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1878-79	2,85,670	1,07,350	1,78,320
1879-80	3,07,501	1,10,514	1,96,987
1880-81	2,66,556	1,28,969	1,37,587
1881-82	2,33,511	1,52,985	80,526
1882-83	2,87,043	1,50,032	1,37,011

After a considerable decline of the balance sheet during several years, a decided improvement has been effected during the year under review, the receipts having increased by Rs. 53,532, while the expenditure has, at the same time, been reduced by Rs. 2,953.

Madras.

122. The financial results of the year are as follow :—

Circle.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
Northern	3,91,298	2,53,925	1,37,373
Southern	5,15,144	3,90,940	1,24,204
Total of 1882-83	9,06,442	6,44,865	2,61,577
Total of 1881-82 ...	8,06,024	6,03,106	2,02,918
Increase in 1882-83	1,00,418	41,759	58,659

The receipts are almost the same as those estimated in the forecast prepared by Mr. Brandis and Major Campbell Walker, while the charges are considerably lower. The receipts and charges are now altogether provincial, but it is satisfactory to notice that the balance sheet shows a fair surplus. It is hoped that the departmental finance will be administered on the same principle in future years, as it is desirable that the receipts should ordinarily show a fair margin of profit after deducting the charges of the Department.

Bombay.

123. The financial results of the year, compared with those of 1881-82, are as follow :—

Circle.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
Northern	9,13,531	5,37,124	3,76,407
Southern	7,33,058	4,09,970	3,23,088
Sind	4,43,764	3,10,665	1,33,099
Total in 1882-83	20,90,353	12,57,759	8,32,594
Total in 1881-82	18,28,089	11,48,458	6,79,631
Increase in 1882-83	2,62,264	1,09,301	1,52,963

The increase in the receipts was due to a considerably larger demand for forest produce generally in the Northern and Southern Circles and to enhanced sales of railway fuel in Sind.

Export of Forest Produce.

124. The following statement shows the quantities of forest produce exported from India during the year :—

Articles.	Quantity, in Tons of 20 Cwt.; in the case of Teak, 50 Cubic Feet.		Valuation at Port of Shipment in 1882-83.	
	Average of five years, 1877-78 to 1881-82.	In 1882-83.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	572	528	12,59,165	2,385
2. Shell-lac	3,402	5,143	55,47,619	1,079
3. Lac-dye	429	196	46,104	235
4. Sandalwood, ebony, and other ornamental woods	.....	(Not known)	4,07,037	(Not known)
5. Cutch and gambier	11,484	12,325	30,52,434	248
6. Myrabolans	21,405	23,558	18,46,976	78
7. Teak	51,079	59,187	61,12,597	103
Total in 1882-83	.....	.....	1,82,71,932	.....
Total in 1881-82	.....	.....	1,62,46,269	.....
Increase in 1882-83	.....	.....	20,25,663	.....

These data show an increase under every head except caoutchouc and lac-dye. The total value is upwards of twenty lakhs of rupees in excess of that of the previous year.

STATE

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Assam.	Coorg.	Ajmere.	Biluchistan.	Forest Survey.
RECEIPTS.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	1,57,682	4,22,758	3,54,931	75,063	20,23,913	17,534	1,06,222	217	4,644	.....
II.—Timber and other produce removed from the forests by consumers or purchasers.	5,02,082	5,59,639	3,32,665	8,69,066	2,55,350	2,20,316	24,974	6,283	365	.....
III.—Confiscated drift and waif wood.	6,022	8,779	37,599	4,536	1,28,224	2,765	.....	1	.....	.....
IV.—Revenue from forests not managed by Government.	.....	7,120	23,541	9,728	69,373	5,343	.....	.....	.....	.....
V.—Miscellaneous ...	28,173	15,107	17,974	19,254	27,034	2,647	6,826	625	30	348
Total Receipts ...	6,93,959	10,13,403	7,66,710	9,77,647	25,03,894	2,48,605	1,38,022	7,126	5,039	348
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	93,122	3,04,774	1,35,258	38,629	7,71,340	966	12,502	48	2,768	.....
II.—Timber and other produce removed from the forests by consumers or purchasers.	26,508	33,653	1,326	1,57,413	6,684	5,622	.....	108	.....	.....
III.—Confiscated drift and waif wood.	1,219	580	18,442	177	56,485	129	.....	.....	.....	.....
IV.—Revenue from forests not managed by Government.	.....	930	17,813	.....	.....	.....	.....	.....	.....	.....
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	.....	12,826	36,740	251	.....	.....	.....	.....	.....	.....
VI.—Live and dead stock	10,143	22,302	4,576	8,096	41,422	9,476	1,955	180	50	3,135
VII.—Communications and buildings.	19,604	1,06,182	15,157	3,000	27,121	17,273	1,338	610	.....	.....
VIII.—Demarcation, improvement, and extension of forests.	48,788	65,165	52,885	23,644	55,667	39,762	18,253	2,734	280	6,425
IX.—Miscellaneous ...	6,178	10,393	1,360	4,335	15,028	2,701	1,600	9	.....	.....
Total Conservancy and Works.	2,05,562	5,56,805	2,83,557	2,35,545	9,73,747	75,929	35,648	3,689	3,098	9,560
B.—Establishments.										
I.—Salaries	1,50,623	2,35,510	2,28,919	1,48,696	2,10,581	79,389	23,018	6,257	6,932	26,602
II.—Travelling allowances.	19,444	32,767	33,435	16,429	30,534	13,213	5,254	963	1,823	4,194
III.—Contingencies ...	6,555	13,943	14,840	11,578	14,097	3,292	862	375	108	1,239
Total Establishments ...	1,76,622	2,82,220	2,77,194	1,76,703	2,55,212	95,894	29,134	7,595	8,863	32,035
Grand Total of Expenditure.	3,82,184	8,39,025	5,60,751	4,12,248	12,28,959	1,71,823	64,782	11,284	11,961	41,595
SURPLUS ...	3,11,775	1,74,378	2,05,959	5,65,399	12,74,935	76,782	73,240	.....	.....	.....
DEFICIT ...	.....	.....	.....	.....	.....	.....	.....	4,158	6,922	41,247

MENT I.

Department in India for the year 1882-83.

Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	RECEIPTS.
31,62,964	3,31,660	12,33,596	47,28,220	5,117	47,33,337	I.—Timber and other produce removed from the forests by Government agency.
27,70,740	5,40,881	7,38,908	40,50,529	2,78,135	43,28,664	II.—Timber and other produce removed from the forests by consumers or purchasers.
1,87,926	11,108	11,336	2,10,370	2,030	2,12,400	III.—Confiscated drift and waif wood.
1,15,105	.....	53,607	1,68,712	.....	1,68,712	IV.—Revenue from forests not managed by Government.
1,18,018	22,793	52,906	1,93,717	1,761	1,95,478	V.—Miscellaneous.
63,54,753	9,06,442	20,90,353	93,51,548	2,87,043	96,38,591	Total Receipts.
						EXPENDITURE.
						A.—Conservancy and Works.
13,59,407	1,01,061	4,93,523	19,53,991	678	19,54,669	I.—Timber and other produce removed from the forests by Government agency.
2,31,314	14,406	25,351	2,71,071	10,437	2,81,508	II.—Timber and other produce removed from the forests by consumers or purchasers.
77,032	1,872	522	79,426	.....	79,426	III.—Confiscated drift and waif wood.
18,743	.....	4,925	23,668	.....	23,668	IV.—Revenue from forests not managed by Government.
49,817	10,835	16,158	76,810	17,120	93,930	V.—Rent of leased forests and payments to shareholders in forests managed by Government.
1,01,335	7,094	3,913	1,12,342	3,772	1,16,114	VI.—Live and dead stock.
1,90,285	5,945	32,071	2,28,301	8,781	2,37,082	VII.—Communications and buildings.
3,13,603	1,62,984	2,33,592	7,10,179	14,101	7,24,280	VIII.—Demarcation, improvement, and extension of forests.
41,604	5,604	9,050	56,258	3,996	60,254	IX.—Miscellaneous.
23,83,140	3,09,801	8,19,105	35,12,046	58,885	35,70,931	Total Conservancy and Works.
						B.—Establishments.
11,16,527	2,67,851	3,29,963	17,14,341	77,437	17,91,778	I.—Salaries.
1,58,056	51,380	83,002	2,92,438	7,944	3,00,382	II.—Travelling allowances.
66,889	15,833	25,689	1,08,411	5,766	1,14,177	III—Contingencies.
13,41,472	3,35,064	4,38,654	21,15,190	91,147	22,06,337	Total Establishments.
37,24,612	6,44,865	12,57,759	56,27,236	1,50,032	57,77,268	Grand Total of Expenditure.
26,30,141	2,61,577	8,32,594	37,24,312	1,37,011	38,61,323	SURPLUS.
.....	.....	.....	.....	.....	.....	DEFICIT.

STATEMENT II.

Financial Results of Forest Administration for the year 1882-83.

Province.	Timber and other Produce removed from the Forests by Government Agency.			Other Revenue.			Formation, Protection, and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	1,58,131	1,41,337	16,794	5,35,828	1,06,458	4,29,370	1,34,389
North-Western Provinces and Oudh.	4,23,662	4,36,841	—13,179	5,89,741	1,55,899	4,33,842	2,46,285
Punjab	3,92,530	2,85,123	1,07,407	3,74,180	1,14,039	2,60,141	1,61,589
Central Provinces ...	75,062	53,711	21,351	9,02,585	2,21,262	6,81,323	1,37,275
British Burma ...	21,50,827	9,80,942	11,69,885	3,53,067	90,434	2,62,633	1,57,583
Assam	20,298	1,093	19,205	2,28,307	58,639	1,69,668	1,12,091
Coorg	1,06,222	24,186	82,036	31,800	6,623	25,177	33,973
Ajmere*	218	48	170	6,908	2,108	4,800	9,128
Biluchistan	4,644	7,225	—2,581	395	2,216	—1,821	2,520
Forest Survey* ...	...	...	...	348	...	348	41,595
Total ...	33,31,594	19,30,506	14,01,088	30,23,159	7,57,678	22,65,481	10,36,428
Berar	5,117	678	4,439	2,81,926	1,02,686	1,79,240	46,668
Total Bengal Presidency ...	33,36,711	19,31,184	14,05,527	33,05,085	8,60,364	24,44,721	10,83,096
Madras				Data not available.			
Bombay				Data not available.			
Grand Total ...	...	...	...	...	...	...	...

* These data have been prepared in the Inspector-General's Office; they are only approximately correct.

STATEMENT III.

Receipts, Charges, and Surplus of the Forest Department throughout India during the nineteen years from 1864-65 to 1882-83.

(Arranged in periods of three years.)

STATE

Receipts, Charges, and Surplus of the Forest Department throughout

(Arranged in periods

Provinces.	RECEIPTS.							CHAR			
	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76. Average.	1876-79. Average.	1879-82. Average.	1882-83.	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76. Average.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	44,569	1,37,995	1,36,206	1,66,947	3,54,884	5,48,199	6,93,959	49,559	1,29,245	98,137	1,07,992
North-Western Provinces and Oudh.	7,47,738	7,31,977	11,78,424	15,20,130	11,60,178	10,16,096	10,13,403	3,99,475	4,70,887	10,11,753	9,87,657
Punjab	2,45,083	3,39,531	8,09,455	8,24,385	5,94,361	6,69,935	7,66,710	2,58,164	4,32,291	9,11,741	5,99,289
Central Provinces ...	2,19,682	3,72,016	5,29,186	6,51,827	7,32,699	10,09,915	9,77,647	1,12,971	3,27,000	2,62,317	3,16,186
British Burma ...	7,52,972	8,16,178	8,05,997	13,07,481	14,30,684	16,42,869	25,03,894	2,86,813	3,90,674	3,71,737	6,50,640
Assam	Included in Bengal.			78,259	1,25,891	1,66,462	2,48,605	Included in Bengal.			57,343
Coorg	80,803	86,782	83,648	91,849	76,321	96,669	1,38,022	11,030	21,174	28,415	36,796
Ajmere	...	...	24	374	1,716	2,350	7,126	...	...	13,055	26,084
Biluchistan ...	...	...	...	...	...	16,496	5,039	...	...	...	...
Forest Survey ...	...	...	...	...	63	103	348	...	...	21,178	56,928
Total Bengal Presidency.	20,90,847	24,84,479	35,42,940	46,41,252	44,76,797	51,69,094	63,54,753	11,18,012	17,71,271	27,18,333	28,38,915
Madras	3,25,530	4,37,051	3,92,470	4,18,293	4,01,057	4,58,100	9,06,442	2,20,237	2,81,808	3,72,908	3,93,713
Bombay ...	9,66,363	11,10,995	11,58,013	12,20,252	12,23,360	16,25,203	20,90,353	6,50,183	5,73,019	6,40,190	7,66,711
Total British Provinces.	33,82,740	40,32,525	50,93,423	62,79,797	61,01,214	72,52,397	93,51,548	19,88,432	26,26,098	37,31,431	39,99,339
Berar ...	20,349	94,494	1,97,578	2,52,249	2,72,679	2,69,189	2,87,043	7,729	44,385	88,619	89,301
Grand Total ...	34,03,089	41,27,019	52,91,001	65,32,046	63,73,893	75,21,586	96,38,591	19,96,161	26,70,483	38,20,050	40,88,640

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MENT III.

India during the nineteen years from 1864-65 to 1882-83.

of three years.)

GES.			SURPLUS,							
1876-79. Average.	1879-82. Average.	1882-83.	1864-67. Average.	1867-70. Average.	1870-73. Average.	1873-76. Average.	1876-79. Average.	1879-82. Average.	1882-83.	PROVINCES.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
2,70,524	3,35,246	3,82,184	— 4,990	8,750	38,069	58,955	84,360	2,12,953	3,11,775	Bengal.
7,99,484	7,70,793	8,39,025	3,48,263	2,61,090	1,66,671	5,32,473	3,60,694	2,45,303	1,74,378	North-Western Provinces an Oudh.
5,21,068	4,97,438	5,60,751	— 13,081	— 92,760	—1,02,286	2,25,096	73,293	1,72,497	2,05,959	Punjab.
3,33,344	5,05,033	4,12,248	1,06,711	45,016	2,66,869	3,35,641	3,99,355	5,04,882	5,65,399	Central Provinces.
8,59,754	8,72,093	12,28,959	4,66,159	4,25,504	4,34,260	6,56,841	5,70,930	7,70,776	12,74,935	British Burma.
1,05,411	1,46,972	1,71,823	In	cluded in	Bengal	20,916	20,480	19,490	76,782	Assam.
34,808	57,170	64,782	69,773	65,608	55,233	55,053	41,513	39,499	73,240	Coorg.
16,943	13,376	11,284	...	...	— 13,031	— 25,710	— 15,227	— 11,026	— 4,158	Ajmere.
...	17,048	11,961	...	...	...	...	...	— 552	— 6,922	Biluchistan.
59,179	43,234	41,595	...	...	— 21,178	— 56,928	— 59,116	— 43,131	— 41,247	Forest Survey.
30,00,515	32,58,403	37,24,612	9,72,835	7,13,208	8,24,607	18,02,337	14,76,282	19,10,691	26,30,141	Total Bengal Presidency.
3,79,422	3,74,806	6,44,865	1,05,293	1,55,243	19,562	24,580	21,635	83,294	2,61,577	Madras.
8,96,016	11,06,622	12,57,759	3,16,180	5,37,976	5,17,823	4,53,541	3,27,344	5,18,581	8,32,594	Bombay.
42,75,953	47,39,831	56,27,236	13,94,308	14,06,427	13,61,992	22,80,458	18,25,261	25,12,566	37,24,312	Total British Provinces.
1,03,990	1,30,823	1,50,032	12,620	50,109	1,08,969	1,62,948	1,68,689	1,38,366	1,37,011	Berar.
43,79,943	43,70,654	57,77,268	14,06,928	14,56,536	14,70,951	24,43,406	19,93,950	26,50,932	38,61,323	GRAND TOTAL.

REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA,

FOR THE YEAR

1883-84.

BY

B. RIBBENTROP, Esq.,

OFFICIATING INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

SIMLA:

GOVERNMENT CENTRAL BRANCH PRESS.

1885.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY.

SIMLA:
PRINTED BY THE SUPERINTENDENT, GOVERNMENT
CENTRAL BRANCH PRESS.

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INTRODUCTION.

Summary of Progress from 1879 to 1884.

ALTHOUGH the Inspector General of Forests to the Government of India issues Annual Reviews, bringing together, in a concise form, the results of Forest Administration in each year, it will be useful to recapitulate once every five years the principal measures which have occupied the attention of the Government of India during that period. It is proposed to do this in the following paragraphs.

2. The Forest Department is one of the branches of business made over to the Home Secretary, and is in charge of the Member of Council who holds the portfolio of the Home and the Revenue and Agricultural Departments. The Inspector General of Forests, besides acting as professional adviser of the Government in all Forest matters, fulfils the functions of Under Secretary in the Home Department, submitting cases direct to the Secretary. The Members in charge of Forest work since 1880 have been the Honourable Mr. (now Sir) Rivers Thompson up to the 9th May 1882, and the Honourable Sir S. C. Bayley from that date to the present time. For the past three years the Inspector General has been Dr. W. Schlich, who has recently been deputed to England in connection with the establishment of a Forest School at Cooper's Hill. His predecessor was Dr. D. Brandis, C.I.E., the founder of systematic Forestry in India, whose labours in the cause of Forestry in India must always command the grateful remembrance of Government.

3. As pointed out in the Review for 1882-83, the most remarkable feature in Indian Forest Administration, during the last five years, has been the rapid increase of the Revenue. Five years ago it amounted to 71 lakhs of rupees, and now it has risen to 108 lakhs. This is, in some measure, an indication of the increasing demand on the Government forests, which is chiefly due to the destruction of private forests, brought about by the extension of railway communication, and the increasing prosperity of the country. The private forests have for a number of years past, and it may be said since the occupation of India by the British (which event was synchronous with the springing up of an increased demand), been steadily reduced by indiscriminate fellings without regard to reproduction. In some cases the object was to clear the ground for cultivation, and in others to satisfy an ever-increasing demand for forest produce. Where railways have been constructed, the forests have rapidly disappeared, not only to make room for the march of civilisation, but also to supply the large requirements of the lines. Taking into consideration the special impetus which has lately been given to the construction of additional railways, the final destruction of most private forests within a reasonable distance from them may safely be predicted. The result of this change is that the requirements for forest produce, which were formerly chiefly satisfied from private domains, must, in an ever-increasing proportion, be obtained from the Government lands. These circumstances naturally demand special attention, and steps have had to be taken to counteract, as far as lies in the power of Government, the effects of this indiscriminate destruction of forests in all the more advanced districts.

4. In a country like India it is absolutely necessary that a certain portion of the land shall always remain under forest. It is not possible to ascertain the actual proportion so covered at present, but the necessary forest area may be put down as not less than one-fourth of the total area. It is also

necessary that the forest area should be distributed over the country in a suitable manner. The total area of British India may be taken as about 867,000 square miles. The area over which the Indian Forest Department exercises control is as follows:—

	Square miles.
Reserved Forests	48,765
Protected „	8,585
District „	16,862
Total ...	74,212

The area of District Forests in Madras, Bombay, Burma, Coorg, and Ajmere is not known at present, but it is presumed that, by adding this to the above, the total area over which the authority of the Department now extends may be put down at 100,000 square miles. This represents less than one-half of the minimum forest area which may be said to be necessary for the well-being of the country. Moreover, the control over about one-half of the above-mentioned area is, for various reasons, of a very limited nature, so that barely 50,000 square miles, or about one-fourth of the required area, can be considered as under real forest conservancy. It follows that, if complete protection is to be given to the country against future dearth of forest produce, either the area of Government lands under actual forest management must be very considerably increased; or laws must be passed which permit a certain interference with private forests; or recourse must eventually be had to both of these measures.

5. Every effort has been made during the last five years to increase the areas under conservancy, and to provide for their better and closer management. Forest laws have been passed, the organization improved, the staff reorganized, the training of superior and subordinate establishments considerably advanced, and steps have been taken towards the systematic preparation of Forest Working Plans, which will ensure not only the most advantageous method of working the forests with due consideration of the requirements of the people, but also enable Government to follow the working at every step, so as to render the estates an everlasting and increasing benefit to the general community.

Forest Legislation.

6. A general Indian Forest Act was passed in 1878, which provides for the preservation and management of the forests, the control of forest produce in transit, and the duty leviable on timber. It has been extended to all British Indian provinces, except Madras, Burma, the Hazara District in the Punjab, Ajmere, Coorg, Berar, and Biluchistan. For Ajmere and the Hazara District special Regulations are in existence. Forest legislation for Burma, Madras, Coorg, and Berar has occupied the attention of the Government of India during the last five years. An Act for Burma was passed in 1881, and one for Madras in 1882, while a Forest Regulation for Berar is under consideration. The authorities in Coorg are now considering whether to introduce into that province the Indian or the Madras Forest Act.

7. It may be asked why special legislation was necessary for a few provinces, when the general Indian Forest Act sufficed for all the others. As a matter of fact these separate enactments are more the result of circumstances than of necessity. There is no reason whatever why one General Act should not do for all provinces; but owing to certain defects in the Act of 1878, the Chief Commissioner of British Burma declined to extend it to that province, and the Government of Madras held that its provisions could not be applied to the Southern Presidency, for reasons which will be explained further on; while in Berar certain forest rules existed, which obviated the necessity of immediate legislation for that province.

8. The Burma and Madras Acts proceed on the same general lines as the Indian Act, but, besides certain minor improvements, they differ on this important point, that the general Indian Act recognises two different classes of State Forests,—Reserved and Protected Forests,—while the later enactments recognise only one class.

9. When the Indian Forest Act of 1878 was first drafted, it was intended to create only one class of demarcated State Forests, *viz.*, Reserved Forests, originally so called because the areas were reserved from cultivation; but as their formation would take time, provision was also made for the protection of the Government forest areas generally, until it could be decided what areas should be maintained permanently as forests by constituting them demarcated or reserved forest. In passing the Bill through Committee in the Legislative Department considerable changes were introduced, which ended in providing for the constitution of—

(*a*) Reserved Forests (Chapter II. of the Act); and

(*b*) Protected Forests (Chapter IV. of the Act).

Chapter II provides for the demarcation of reserves, and for enquiry into, and the record and regulation of rights; it prevents the springing up of new rights except under the orders of Government; and arranges for the protection of the areas. In a word, Chapter II. provides the proper means for the constitution and maintenance of permanent forest estates, in an efficient and business-like manner.

10. Chapter IV., in constituting Protected Forests, attempts something of the same kind, but in a less complete manner; it demands an enquiry into rights and their record, but the statements in this record are only considered correct until the contrary is proved, and it does not provide for the proper regulation of the rights, whenever this should appear necessary for the purpose of maintaining the forest as such. Nor does it provide sufficient means for the protection of the area and of the forest growth on it. It follows that Chapter IV. attempts too much on the one hand and too little on the other, and consequently it is, in its present shape, an anomaly. Unfortunately it has occasionally been made use of in order to avoid the more minute procedure prescribed in Chapter II., and thus attempts have been made to create permanent forest estates under it without securing the necessary guarantees of lasting success.

11. When the time comes for a general revision of the Act, these shortcomings must be removed. In the meantime, Burma and Madras have taken advantage of the experience gained since 1878, and have substituted for Chapter IV. a set of simple provisions which do not attempt a half-hearted record of rights, but merely provide in a general way for the protection of the forest produce on all Government lands, until the demarcation and settlement of the permanent State Forests have been completed.

12. Another point on which the Burma and Madras Acts differ from the Indian Act is in the matter of "Private Forests." The latter Act provides that the Government may assign to any village community land which has been constituted a Reserved Forest; hence, in order to constitute a "Village or Communal Forest," it is necessary to first go through the procedure of making it a Reserved Forest. The Burma Act, on the other hand, provides that any land at the disposal of Government may be constituted a Village Forest for the benefit of any village community or group of such communities. This is a much more expeditious method of procedure, and in this respect also the Burma Act is superior to the Indian Act. The Madras Act contains no provision for the constitution of Village Forests in the above sense.

13. The Berar Forest Regulation, which is about to become law, is in many respects of a more simple description than any of the previous Acts, because in that province all Government lands were at settlement declared free of rights, and, in order to constitute a State Forest, only a notification to that effect in the Local Government Gazette is required. The Regulation recognises only one class of demarcated State Forests, for which it provides the proper means of protection, as well as for making the several areas as generally useful as is compatible with due regard to their maintenance as forests.

14. On the whole, it may be safely asserted that, although the Indian Forest Laws are not perfect, very considerable progress has of late years been made in improving them. Whether ultimately each province will have its separate Act, or whether the several Acts now existing will be summed up in one, it

is at present difficult to foresee; it would, however, appear to be the most natural and suitable arrangement that the efforts of the Administration should be directed towards the passing of one Act, embodying the leading general principles of forest legislation, which must be the same in all provinces, and giving powers to the several Local Governments to draw up, under the authority of the general law, regulations to suit the peculiar requirements of each province.

15. The present enactments provide for the promulgation of *local rules* under various sections of the Acts. In accordance with these provisions numerous sets of rules have been drawn up and passed, during the last five years, in Madras, Bombay, Bengal, North-Western Provinces and Oudh, Punjab, Burma, Assam, and Coorg.

Departmental Organization.

16. The Forest Staff is divided into—

(*a*) Controlling Staff,

(*b*) Executive Staff, and

(*c*) Protective Staff.

The Controlling Staff will now consist of all officers holding the rank of Assistant Conservator and upwards; it has been reorganized in all three presidencies during the last three years.

17. The creation of the Forest Department is of comparatively recent date, its first organization in the *Bengal* Presidency having been attempted as late as 1862. Since then the work has increased rapidly, and frequent changes have been necessary in the number and the grading of the staff to meet the growing requirements of the administration. The first graded list of Conservators, Deputy, and Assistant Conservators was published in 1869, when the staff consisted of 57 officers, costing on the average Rs. 577 each a month. Subsequently frequent additions were made, until in 1882 the staff consisted of 94 officers, costing on the average Rs. 558 each a month. More from necessity than design the rate of pay was thus reduced, while the number of officers was increased, so that the prospects of promotion for the junior officers were less favourable in 1882 than they were in 1869. In particular, the proportion of higher appointments was very small, the number of Conservators and Deputy Conservators being to Assistant Conservators in the proportion of 1 to 1. The result was that a junior Assistant Conservator had to serve from 12 to 15 years before he could hope to be promoted to the grade of Deputy Conservator on Rs. 500 per mensem; and from 18 to 20 years before he could reach the rank of Deputy Conservator on Rs. 700 a month. This was not so much felt while the Department was of recent creation and the majority of the officers were young, but for some time past a strong feeling of dissatisfaction and disappointment with their position and prospects had gathered amongst the staff, and in order to meet the just claims of a deserving body of servants of the State, a reorganization was decided on, which, having received the sanction of Her Majesty's Secretary of State, came into operation on the 3rd September 1882.

18. Under this reorganization the number of officers was raised to 100, while the average rate of pay was fixed at Rs. 642 a month per officer. In 1884 three officers were added to meet the increased requirements of Burma, and recently an officer has been sanctioned for Biluchistan, and 3 additional officers for Assam, so that at the present moment the staff in the Bengal Presidency stands as follows:—

Rates of pay.	No.
Conservators of Forests (Rs. 1,000, 1,250, and 1,500)	10
Deputy ditto („ 550, 650, 800, and 900)	55
Assistant Conservators of Forests (Rs. 250, 350, and 450) ...	38
Special appointments in connection with the Forest School, Forest Surveys and Working Plans (Rs. 600 to 900)	4
Total ...	107 officers,

with an average pay of Rs. 628 each per mensem.

19. Before the reorganization of September 1882 came into force, the Forest staff had, by a series of measures, been localised. Accordingly, the new staff (with the exception of the four special appointments) was arranged in five lists as follows :—

Provincial list.	Conservators.	Deputy Conservators.	Assistant Conservators.	Total.
1. Bengal-Assam	2	11	9	22
2. North-Western Provinces and Oudh (with Ajmere) ...	3	10	8	21
3. Punjab (with Biluchistan)	1	11	7	19
4. Central Provinces-Berar (with Coorg)	2	11	7	20
5. British Burma (with the Andamans)	2	12	7	21
Total ...	10	55	38	103

20. In the *Madras* Presidency the Controlling Staff had gradually grown, until it consisted, in December 1882, of 16 officers, with an average rate of pay of Rs. 455 each officer a month. Very considerable changes, which will be explained further on, were introduced in 1882, which rendered a reorganization absolutely necessary, and accordingly in February 1883 Her Majesty's Secretary of State sanctioned a staff of 24 officers. Subsequently two further officers were added, so that the staff stands now as follows :—

Conservators of Forests	2
Deputy Conservators of Forests	14
Assistant „ „	10
Total ...	26 officers;

with an average pay of Rs. 628 a month per officer, the grading being the same as that on the list of the Bengal Presidency.

21. Similarly, the staff in the *Bombay* Presidency consisted in 1883 of 23 officers drawing pay at the rate of Rs. 551 a month each officer. A reorganization was sanctioned in November 1883, which provides the following staff :—

Conservators of Forests	3
Deputy Conservators of Forests	14
Assistant „ „	10
Total ...	27 officers;

with an average rate of pay of Rs. 635 each a month. The Government of Bombay does not consider this staff sufficient, and it has pointed out that the number of officers must shortly be further increased, if the Department is to do justice to the work devolving upon it.

22. To sum up, the Controlling Staff in the 3 presidencies stands as follows :—

	Rates of Pay	No.
Inspector General of Forests to the Government of India	Rs. 1,700 to 2,000	... 1
Conservators of Forests	„ 1,000 to 1,500	... 15
Deputy Conservators of Forests ...	„ 550 to 900	... 83
Assistant „ „ ...	„ 250 to 450	... 58
Special appointments	„ 600 to 900	... 4
Total ...		161 officers.

It may be assumed that the total staff will, during the next few years, rise to about 170 officers in all. Efforts should be made to prevent any further growth for a series of years to come, by developing the executive staff, and thus creating a cheaper agency for the subordinate duties.

23. While the duties of the Controlling Staff consist chiefly in initiating all important measures and in exercising a proper supervision over the operations of the Department, those of the rest of the Staff comprise the executive and protective work. The creation of an efficient and trustworthy Local Staff is specially difficult in a country like India, for reasons which need not be detailed here. Suffice it to say that special efforts have been made during the last five years to attain the desired end, by a more careful selection of the men to be employed, by educating them for their profession, and by holding out reasonable prospects of advancement. It would lead too far to detail all the various steps taken in this respect; the final result as now arrived at is as follows:—

The Executive Forest Staff comprises—

	Monthly pay.
(*a*) Sub-Assistant Conservators	Rs. 150 and upwards.*
(*b*) Forest Rangers	„ 50 to 120.

The Protective Forest Staff comprises all members of the forest establishment below the rank of Forest Ranger, such as Foresters, Forest Guards, &c.

System of Administration.

24. The Conservator of Forests has the general control of forest matters in a province or in part of a province. His charge is sub-divided into the following charges:—

I.—Divisions or controlling charges, held by Deputy Conservators, Assistant Conservators, 1st grade, and officers of a lower grade who have qualified for the charge of a Division.

II.—Ranges or executive charges, held by Assistant Conservators of the 2nd and 3rd grades, Sub-Assistant Conservators and Forest Rangers.

III.—Beats, or protective charges, held by Foresters and Forest Guards.

25. When the Forest Department was first started, the officers were generally placed under the direct orders of the Conservator of Forests, who in his turn was responsible to the Local Government. Soon, however, it was felt that the officers were in a somewhat isolated position, and that often friction took place between them and the ordinary Civil and Revenue authorities of the country. Hence the desire sprung up to connect the two services more closely, and systematic proposals for giving effect to this were put forward by Mr. Brandis, late Inspector General of Forests to the Government of India, when submitting a scheme for a reorganization of the Bombay Forest Staff in 1870. The plan then adopted consists of the appointment of a "District Forest Officer" to each district or collectorate, who is in charge of all forest matters in the district, and entirely subordinate to the Collector, through whom he corresponds with the Conservator. The next step in this direction was taken by the Chief Commissioner of the Central Provinces, who introduced in 1877 a modified system, according to which the Conservator and his Assistants remain in independent charge of all Reserved Forests, while the District Forest Officers are subordinate to the Deputy Commissioners regarding all Unreserved Forests. A further modification was introduced by the Government of the North-Western Provinces and Oudh in 1880, by which the District Forest Officer is made subordinate to the Collector, his correspondence being arranged in two classes; that referring to accounts, establishments, and a few other subjects is sent direct to the Conservator of Forests, while that on all other subjects is submitted by the District Forest Officer to the Collector, who forwards it to the Conservator. The same system was introduced into Assam on the 1st January 1882, and a similar arrangement has been in force in Burma since 1880. In Bengal the subject has been under consideration for a number of years, and arrangements have now been made to establish the connection between the Civil and Forest administration in most districts. The system has, however, been modified in

* NOTE.—The upper limit of salaries for Sub-Assistant Conservators will have to be considered at some future time. At present, the most highly paid Sub-Assistant Conservators draw Rs. 250 per mensem.

some parts of the country by placing a senior Deputy Conservator of Forests under the orders of the Commissioner of the Division instead of under those of the District Officer. In the Hazara and Rawalpindi Districts of the Punjab the Forest Officers have for many years past been nominally subordinate to the Deputy Commissioners. In 1881 proposals were submitted to make the system general in the province, and this is now being done. In Madras a system similar to that adopted in Bombay has been in force for some time, but the arrangements were improved in 1882. At the suggestion of Dr. Schlich, Inspector General of Forests, a similar system has just been introduced into Berar.

26. Generally speaking, it may be said that during the last five years the principle has been accepted and carried into effect in all provinces where this had not been done previously. These measures are calculated to be of considerable importance for the purposes of forest conservancy in India. The Forest Department having thus become an integral part of the general administration, all jealousy and friction about lands and revenue disappear; and the Collector or Deputy Commissioner being directly interested in the administration of the forest lands, a thorough safeguard has been established that the forest law is applied in a judicious manner, and that the requirements of the people of the district are duly considered. On the other hand, the just demands and requirements of forest conservancy will be attended to under the full authority of the head of the district, while full control over the departmental finance, the organization, and the technical part of the work has been reserved to the Conservator of Forests—an arrangement which will ensure a proper continuity of the work of the Department.

Training of Forest Officers in Europe.

27. As far back as 1867 arrangements were made, partly in France and partly in Germany, for the professional education of the members of the Controlling Staff. Under these arrangements 87 trained officers have, up to date, joined the Department in India. Of late years, however, a desire has made itself felt of providing the means of education in England, so as to make the Department independent of foreign countries. The subject has been discussed in detail for several years past, and it has now been decided to organize a Forest class at Cooper's Hill. During the discussion of this subject the Government of India, while admitting the desirability of having a National Forest School in England, has repeatedly expressed doubts whether the time for the contemplated change had arrived, and it has more particularly been pointed out that England does not at the present moment possess any forests fit for training grounds in all the branches of Forest science and practice required by an Indian Forest Officer; and it was suggested that the arrangements hitherto obtaining might remain in force until such training grounds had been established in England. However, it has now been decided to start operations at Cooper's Hill in September 1885, and if the various authorities work harmoniously together, there is perhaps no reason why the new institution should not, in course of time, become a success. The most essential point is that the management of some of the English Crown Forests should be so altered as to afford the necessary means for the practical instruction of the students.

The Forest School at Dehra Dun.

28. The most important educational measure has been the establishment of the Dehra Dun Forest School. As early as 1869 special attention was drawn to the necessity of training natives of India for forest work. Various experiments were made, until the Dehra Dun Forest School was established in 1878. As a matter of fact, however, little training, and that only practical, was done until 1881. In that year, for the first time, the work was started in a systematic manner, and the first course of theoretical instruction commenced on the 1st July 1881. Since then the arrangements have been considerably improved until, by a Resolution dated the 3rd June 1884, the School was placed on a new basis. Up to that time it had been a provincial institution, though students from all provinces were admitted. By the above-mentioned Resolution the School was converted into an Imperial establishment and placed under the orders of the

Inspector General of Forests, who arranges for the instruction and management in consultation with the Government of the North-Western Provinces and Oudh. The Director of the Forest School continues to be Conservator of the School Forests, and thus maintains a direct connection with forests suitable for teaching. The Director is assisted, in the first place, by two officers, the Deputy Director and the Instructor, who are both officers holding the rank of Deputy Conservator. One of these two officers devotes the whole of his time to instruction in Forestry, while the other holds charge of the Dehra Dun Forest Division, in the middle of which the School is situated., and also assists in the instruction in auxiliary sciences. The remaining branches are taught by several other Forest and Survey Officers, who have their headquarters at Dehra Dun during summer.

29. The School was originally established for the training of Foresters and Forest Rangers, and this principle has been maintained; but arrangements have also been made for the occasional instruction of members of the Controlling Staff who have been appointed to the Department in India. Apart from the last-mentioned branch, there are two classes, one in English and one in Hindustani, the former being called the *Rangers'* class and the latter the *Foresters'* class. The students of the English class are required to produce a certificate of having passed the Entrance Examination of an Indian University on the English side, and they are, if successful, granted, on leaving the School, certificates of qualification as *Rangers*. The students of the Vernacular class are required to prove that they have passed the Middle Class Examination in the North-Western Provinces and Oudh, or some corresponding standard in another province, and that they possess a competent knowledge of Urdu or Hindi. The course of instruction followed in this class is, for the present, of a much more elementary nature than in the case of the Rangers' class, and the students receive, if successful, on leaving the School, certificates as *Foresters*, which may also be given to students of the English class who have failed to qualify as Rangers.

30. The men who leave the School with the Rangers' certificate will ordinarily be appointed as Rangers on return to their province, and they become eligible for promotion to the rank of Sub-Assistant Conservator of Forests, after five years' satisfactory service as Rangers. The men who only obtain the Foresters' certificate will be employed as Foresters, but they can qualify for promotion to the class of Rangers by rendering satisfactory service as Foresters for not less than two years after their return from the School; they are ordinarily not eligible for promotion to the class of Sub-Assistant Conservator of Forests. Thus men of superior education will enjoy considerable advantages, while at the same time an opening is left for the advancement of Natives who do not know English.

31. The instruction comprises at present the following branches :—

(1) Mathematics.
(2) Elements of Physics and Chemistry.
(3) Elements of Mineralogy and Geology.
(4) Surveying, theoretical and practical.
(5) Elements of vegetable Physiology, and Systematic Forest Botany.
(6) Forestry, especially Sylviculture, Working-Plans, Forest Utilisation and Forest Protection, both theoretical and practical.
(7) Forest Law.
(8) Road-making and building.

The importance of a proper development of the Dehra Dun Forest School cannot be over-rated, and it is hoped that nothing will occur to prevent its further improvement. The results so far obtained are so satisfactory, that a proposal is now under the consideration of the Government of India to provide for the teaching of Agricultural science in connection with the Forest School.

Indian Forest Literature.

32. The principal works on Forestry and cognate subjects brought out under Government patronage during the last five years are:—

(1) Gamble's "Manual of Indian Timbers," 1881.
(2) Baden-Powell's "Manual of the Land Revenue Systems and Land Tenures of British India," 1882.
(3) Baden-Powell's "Manual of Jurisprudence for Forest Officers," 1882.
(4) The Indian Forest Code, 2nd Edition, published in 1881: a 3rd edition is now in the Press, and will shortly be issued.

In addition to the above, a Manual of Indian Sylviculture is under preparation.

33. Gamble's "Manual of Indian Timbers" contains descriptions of the wood of 906 species, belonging to 432 genera, the information for each species extending to the scientific name, vernacular names, description of the wood, geographical distribution of the tree, rate of growth, weight and strength, and uses. The book is a very store-house of information regarding all the more important timbers growing in India.

34. Baden-Powell's two excellent Manuals are of the very greatest use to the Department as well as to Revenue Officers, and they have been prescribed as text books for the examination of Forest Officers in Revenue and Forest Law. The Revenue Manual opens with an attempt, of a somewhat novel character, to give a comparative account of the Land Tenures of India generally, followed by a similar comparative account of the different Land Revenue Systems, *viz.*, the permanent settlement, the malguzari settlement of the Central Provinces, the village or mouzawar settlement of Northern India, and the ryotwari settlement of Madras and Bombay. The remaining or special portions of the book are devoted to a more detailed description of the system of each province, concluding with a chapter comprising the systems of the outlying provinces, such as Burma and Assam, in which none of the well-known great revenue systems prevail, but in which special revenue arrangements, probably of a tentative character, have been adopted.

35. The Manual of Jurisprudence for Forest Officers is the first of its kind which has been published in English, and is the outcome of extended study on the part of the author. The subject of Forest Law in India is of too recent growth to make the Indian Forest Acts a complete representation of Forest Law. The author has therefore given a more complete view of the general principles underlying Forest Jurisprudence, and, for the purpose of comparison, the principles of forest law derived from the leading text books of English, French, German, and Italian Law. His remarks are followed by practical illustrations drawn from the Indian and Burma Forest Acts. Then follow chapters on Criminal Law, dealing with the protection of the forests and the punishment of offences both against the forests and their produce in transit, together with the principles of Criminal Procedure. The next chapter deals with the legal organization of the Forest Service, and the duties and liabilities of Forest Officers. The last chapter treats briefly of portions of the Law of Contract, the outlines of Civil Procedure, and of the Stamp and Registration Laws, as far as Forest Officers need be acquainted with them.

Surveys and Working-Plans.

36. The necessity of procuring suitable maps of the forests and the surrounding country, and of managing the forest estates according to well considered plans, was recognised at an early stage of Indian Forest management. Accordingly, in 1872, a scheme was started of providing a special Survey and Working-Plans Branch of the Department. Only the Survey, however, was actually started, while the Working-Plans Branch remained in abeyance for many years afterwards. The Forest Survey, which is suitably connected with the Imperial Survey of India, has done good work ever since 1872. During the last five years it has chiefly surveyed and mapped forests in the North-Western Provinces and in Berar. Apart from the special Survey,

a considerable area of forests has, during the last few years, been surveyed by the regular Survey Department in Burma and in Bombay.

The Working-Plans Branch has actually been brought into existence only during the last five years, first by starting the preparation of working-plans in a more regular manner in the North-Western Provinces, Burma, the Punjab, and other provinces,. and quite lately by introducing a regular system of preparation and a control by a central office under the authority of the Inspector General of Forests. This last measure must be considered as of the first importance; it was mentioned in the Review for 1882-83, but it may be useful to indicate here its leading principles and motives.

37. A working-plan will henceforth be prepared for every reserved forest or a collection of reserved forests, as well as for all important protected or other forests under the management of the Forest Department. It will be based upon the present condition of the forests, and it will deal with all points connected with their management and improvement, amongst which the following are the most prominent:—

(i) Calculation of the growing stock:

(ii) Calculation of the annual increase:

(iii) Calculation of the quantity of material to be removed, annually or periodically, with due consideration of the production of the forest and of the demand;

(iv) Arrangements for the re-stocking of all cleared areas (natural reproduction, sowing and planting, protection against fire, grazing, &c.).

The minuteness of each working-plan will depend on the demands which are made on the forests, the nature and value of the produce removed from them, and the other purposes which they are to fulfil. The preparation of the working-plans is carried out by selected members of the staff allotted to the several provinces, who work under the orders of the Conservators of Forests. The general supervision of the Branch has been entrusted to the Inspector General of Forests, who will cause to issue, in the form of circulars or otherwise, directions regarding the technical part of the preparation of working-plans. Should he disapprove of the proceedings of any local authorities in this respect, he will suggest to the Local Government concerned the issue of such orders on the subject as may appear to him advisable. Any difference of opinion between the Inspector General and the Local Government will be referred for the orders of the Government of India. The Inspector General of Forests, or the Assistant Inspector General, will also visit the several provinces and advise the local officers on the spot.

Working-plans, when drawn up, will be sent by local Conservators, for scrutiny of their technical points, to the Inspector General of Forests, who will send them, with his opinion and remarks, to the Local Government for the issue of the necessary orders. In due course the working-plans will be submitted to the Government of India, either for record or for orders, in the same way as land revenue settlements or similar works. No deviation from an approved working-plan will be permitted without the previous orders of the Local Government, who will, whenever necessary, consult the Inspector General of Forests before passing such orders. A record of all working-plans and their provisions will be kept in the Inspector General's Office, where the execution of the sanctioned plans will be watched. At the close of each year, Conservators will submit returns to the Inspector General of Forests, showing the work done during the year under the provisions of the working-plan. If any deviation is noticed, the Inspector General of Forests will either draw the attention of the Local Government to it, or submit the case to the Government of India for the necessary orders.

38. The localisation of the forest business, which has been effected of late years, has left the Government of India without any real safeguard that the valuable Government forests are being managed in the right way. The systematic preparation of working-plans and their control gives to the Government of India the means of following the working of the forests, without unduly interfering with the necessary freedom of action of the Local Governments.

Madras.

39. The Government of India has of late years taken an exceptionally large share in advancing forest conservancy in Madras. That Presidency was among the first of the Indian provinces in which forest conservancy received attention; indeed, the well-known Nilambur Teak plantations were commenced as early as 1844, though a regularly constituted Forest Department was apparently not organized until 1856. The development of the Department was peculiar, and towards the year 1875 it had become apparent that its principal efforts were directed towards the establishment of plantations and groves scattered over the country, while the natural forests of the Presidency were not under sufficient control. Then came the Famine Commission in 1877, who pointed out the necessity for more vigorous action in the protection and re-stocking of the natural forests, more especially those situated within the catchment areas of the principal rivers used or diverted for the irrigation of the low-lying country.

40. The more immediate cause for direct interference arose out of the introduction of the Indian Forest Act of 1878. When that Act was under consideration, the Madras Government declared it unsuitable for extension to Madras, because it was held by that Government that the rights of villages over the waste lands and jungles were of such a nature as to make it impossible to constitute forest estates under the provisions of the Indian Forest Act, and after some discussion it was decided to pass a special Act for the Southern Presidency. The first draft of a Madras Forest Bill, which was submitted to the Government of India, was found to be defective as regards both substance and form, and was therefore not approved. After further correspondence a new Act was submitted for the assent of His Excellency the Governor General in Council, but it was found that both from a forest and a legal point of view the Act was unsuitable. Accordingly His Excellency the Governor General in Council vetoed the Act in September 1881, and deputed Mr. Brandis, late Inspector General of Forests to the Government of India, to visit Madras, with the view of his conferring with the Madras Government on the whole subject of forest conservancy in that Presidency. Mr. Brandis left for Madras in October 1881, and remained there until January 1883. During that time he visited nearly all the important forest districts, and submitted proposals to the Government of Madras, which now form the basis of active forest conservancy in the Presidency.

41. The first step of importance was the amalgamation of the Jungle Conservancy Fund with the Provincial Forest Department, and, in connection therewith, the localisation of the Receipts and Charges of the Department. Next the Collector was appointed chief of the Forest Department in each district with a District Forest Officer as Assistant; while the districts were arranged in two Circles, the Northern and Southern, each presided over by a Conservator of Forests, who is the Consulting and Inspecting Officer, with authority in matters of finance and establishments. In order to provide the necessary staff, a comprehensive reorganization of the superior and subordinate establishments was worked out, and received the sanction of the Government of India and of Her Majesty's Secretary of State for India. Three experienced officers belonging to the staff under the Government of India were, at the request of the Madras Government, transferred to the Southern Presidency. The long pending question of a Forest Law for the Madras Presidency was brought to a satisfactory conclusion by the passing, with effect from the 1st January 1883, of the Madras Forest Act, No. V. of 1882.

42. Having thus been provided with the necessary and appropriate means of action, the Department may be said to have started forest work on new lines towards the close of the year 1882. The subject which claims foremost attention is the demarcation and settlement of permanent forest estates, constituted under Chapter II of the Act. The areas which have hitherto been considered as under the more special management of the Department amount to 824 square miles in the Northern Circle, and to 2,046 square miles in the Southern Circle, or a total of 2,870 square miles. These areas have been, or will be,

declared reserves under the Forest Act, together with other forest lands of considerable extent, and in the meantime they will be protected by rules passed under Section 26 of the Act. These operations will tax the energies of the Department for a series of years, and, until considerable progress has been made in this respect, the more professional work of the forester can only be attempted on a moderate scale. A fair commencement has, however, already been made by protecting from fire 865 square miles of the more important forests. Planting operations, which had on the 1st April 1884, extended over 40,850 acres, are being pushed on, while the financial results of the Department are fairly satisfactory. On the whole, it may be said that forest conservancy in Madras has, in the short space of the last three years, been entirely remodelled and put on a satisfactory footing.

Bombay.

43. Forest conservancy has received special attention in Bombay for many years past; and immediately after the passing of the Indian Forest Act, an area of about 15,000 square miles was declared partly reserved and partly protected forests. Although a very considerable area was thus brought under the operation of the Forest Act, this had been done without the necessary enquiries into the rights and requirements of the people living in the vicinity of the forests. Accordingly, such an enquiry, in accordance with the provisions of the Act, was set on foot, and it has, during the last five years, occupied a considerable portion of the time of the Forest staff. In addition, as many as six and seven Civil Officers have been employed on this at one time, besides a number of Civil Officers who attended to it in addition to their ordinary duties. The work is of a very laborious nature, but good progress has been made in it. On the 1st April 1884, the enquiry into and settlement of an area of 6,985 square miles had been finally disposed of, while considerable progress had been made in a large portion of the remaining areas. It is expected that the work will be completed in about three years.

44. The subjects of ráb cutting (*i.e.*, the collection of leaves and shoots for manuring purposes), kumri cultivation, and grazing have specially occupied the attention of the Bombay Government and its officers. Arrangements have been made for a proper ráb supply, without paralyzing forest conservancy, a sufficient area having everywhere been set aside for this purpose. Kumri cultivation is being restricted within reasonable limits, and moreover a fairly successful attempt has been made to combine this method of cultivation with the rearing of useful timber trees. Instead of leasing the grazing in the various forest tracts to speculators, on whom the ryots depended for the grazing, it has been arranged to manage the areas under Government control by levying a fixed grazing fee per head of cattle. This change is described as being a great boon to the people, apart from the fact that it has considerably increased the Government revenue, instead of diverting the money into the pockets of speculators. In order to assist natural reproduction, enormous quantities of seed of useful timber trees have of late years been sown in the Bombay forests; but it has not been possible so far to ascertain the exact results, though they are reported to be favourable.

45. The forest revenue has enormously increased of late years, partly owing to increased requirements of fuel for the Indus Valley Railway, but chiefly in consequence of generally increased demands on the Government forests, brought about by the reduction of private jungles. For years past private owners have cut down their forests and carried them to the nearest large town and other centres of consumption. In the same degree as these sources begin to fail, the demands on the Government forests must increase.

Bengal.

46. Forest conservancy in Bengal was first commenced in a systematic manner towards the end of 1872. Since then it has made rapid progress, and the management is now at least on a par with that in provinces where operations

were begun much earlier. As regards the formation of reserved forests, the following figures will illustrate the progress :—

	Area of reserved forests in square miles.
On the 1st April 1873	106
„ 1st „ 1880	2,945
„ 1st „ 1884	4,635

47. Since the beginning of 1880, forest conservancy has been extended to the Orissa Division and to the southern part of the Chota Nagpore Division. In the former the Khoordah Forests have been brought under departmental management, and the Angul Forests are now being taken up. There are also excellent sal forests in the Khondmals of Bod, which should be brought under control at an early date. In Chota Nagpore the extensive and valuable sal forests in Singhbhoom have been demarcated and settled. The proposed railway direct from Bengal to Bombay *viâ* the Central Provinces passes through these reserves, and the measures taken for their reservation will be highly beneficial. Detailed enquiries have also been made regarding the practicability of bringing the extensive private forests in Chota Nagpore under better management than they have hitherto enjoyed. This question is, however, as yet pending.

48. Mr. Brandis, when Inspector General of Forests, visited the forests in the Darjeeling and Jalpaiguri Districts in 1879, and submitted a Report on them in November 1880, in which he made suggestions regarding their future management. Some difficulties having arisen regarding the management of the forests in the immediate vicinity of Darjeeling, Dr. Schlich, the present Inspector General, enquired into the matter on the spot, and submitted a working-plan for them in April 1882, which has been accepted as the basis for their management. The Inspector General of Forests has lately been on a tour of inspection in the forests of Chota Nagpore which, it is expected, will result in a definite plan for their management being drawn up.

49. The area protected against fire was 661 square miles in 1879-80, and 768 square miles in 1883-84. The area of plantations has increased from 941 to 2,568 acres during the last five years.

The financial results were as follow :—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	4,49,524	1,73,776
„ 1883-84	6,94,334	3,06,521

North-Western Provinces and Oudh.

50. In the North-Western Provinces and Oudh forest conservancy was commenced at a comparatively recent date; hence the progress during the last five years is perhaps not so marked as in some of the other provinces, where operations were commenced at an earlier date. Steady progress has however been made. One of the most important measures carried out during the last five years is the acquisition and consolidation of 85 square miles of forest lands in the Banda District, while an additional area of 33 square miles has been taken under management, the private co-sharers receiving a proportion of the net income. These are steps in the right direction, as forest lands in Bandelkund are on the decrease. The operations in connection with the Dehra Dun Forest School have already been mentioned. Special care and attention has, during the last five years, been bestowed upon the improvement of the management of the School forests. In one part of a forester's work the North-Western Provinces and Oudh are much ahead of any other province, namely, in the construction of roads, of which a considerable number of miles are constructed annually. The preparation of working-plans has also received special attention of late years.

51. The late Inspector General of Forests visited most of the forests during the early months of 1881, and submitted an exhaustive report on them in November of the same year; the suggestions contained in it have since then

guided the local authorities in the management of these forests. The present Inspector General visited the Central Circle in 1884, and discussed and submitted a scheme for the reorganization of the Subordinate Staff, which has been accepted by Government. The main principle of the new organization is, that all the forests shall be grouped in Ranges of suitable size, the work in each Range, or executive charge, being entrusted to a qualified Ranger.

52. The area of reserved forests has, during the last five years, been increased from 3,279 to 3,331 square miles, that of areas protected from fire, from 661 to 874 square miles, and plantations from 2,262 to 3,717 acres.

The financial results were as follow :—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	10,39,966	3,23,372
„ 1883-84	16,11,383	5,69,498

The revenue realized in 1883-84 is exceptionally high, owing to special sleeper operations. Many of the forests in the North-Western Provinces and Oudh were considerably overworked in former years, owing to their position on the edge of an enormous and almost forestless plain. These forest estates are, however, very valuable, and their financial importance will steadily increase.

Punjab.

53. The formation of permanent forest estates was, some five years ago, in a backward state. Efforts have been made of late years to push on this work, but the difficulties in the way were very great. However, some progress has been made, as will be seen from the following data :—

	Area of reserved forests. Square miles.	Area of protected forests. Square miles.
On the 1st April 1879	795	...
„ 1st „ 1884	1,022	311

Much remains to be done in this respect.

The forests in the Native States of Chamba and Bashahr were leased by the British Government 20 years ago. Efforts have been made during the last few years to secure the forests in several of the small Hill States near Simla, but with very limited success.

54. The question of the treatment of the Hoshiarpur chôs or erosion has received much attention. The hills from which the chôs descend have, owing to cutting and excessive grazing, been almost completely denuded of all growth, and as they consist of exceedingly friable material, large masses of debris are annually carried into the plains at their foot, there forming regular sand torrents, which have not only ruined extensive tracts of cultivated land, but have even carried away several villages and a portion of the town of Hoshiarpur. The evil has been permitted to attain very considerable dimensions, the loss of land revenue alone amounting already to about a lakh of rupees annually. However, the matter is now under serious consideration, and it is expected that effective steps will shortly be taken to counteract the further desolation of cultivated lands. Probably the best plan would be to buy out the few inhabitants and graziers who live in those hills, and to bring the land under forest. Such a measure, apart from the fact that it is necessary on general grounds, is even likely to be financially successful, as the hills overhang a large extent of country bare of forest.

55. The late Inspector General of Forests drew up a Report on the Bashahr forests in 1881, this being the third Report on these forests prepared by Mr. Brandis. These important Deodar forests have now been worked on the lines of his proposals for 20 years, with the most beneficial results.

56. Dr. Schlich, Inspector General of Forests, was deputed to Kulu in 1882, in connection with the question of the treatment of the Deodar and other forests in that District. He submitted a Report, in which he proposed that about 80

square miles of deodar localities should be set aside as reserves, while the remaining forests, about 320 square miles, should be preserved with the assistance of the village head-men, but under the control of the Forest Department, for the benefit of the inhabitants. His proposals were only partially accepted by the Local Government, who have substituted a system under which the forests are to be arranged in four different classes, with different rules for each. Such a complicated system is not likely to work in practice, and it will no doubt, after a fair trial, be considerably modified.

57. The area of plantations has, during the last five years, been increased from 17,870 to 18,561 acres. Vigorous efforts are now being made to increase the future supply of deodar by planting it extensively in the most suitable localities.

The progress in the financial results is as follows :—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	6,49,819	1,69,143
„ 1883-84	9,10,177	2,57,031

The Punjab has, more than any other province, profited by the education offered to Forest Officers at Dehra Dun, and the wisdom of this move is already becoming apparent in the improvement of the Executive Staff.

Central Provinces.

58. All waste lands at the disposal of Government in the Central Provinces were declared reserved forests under the Indian Forest Act in 1879. The area amounted in that year to 19,383 square miles, and since then the changes have been insignificant. Of this area, 2,501 square miles were classed as first class reserves, that is to say areas under strict conservancy; while the rest, or 16,882 square miles, were called second class reserves, or areas in which a certain amount of cultivation was permitted, and in which a more lenient conservancy generally is practised. The first class reserves are fairly well demarcated, but the boundaries of the second class reserves are in an unsatisfactory condition. Accordingly much time and labour has of late years been bestowed upon the more complete demarcation of the latter, with the view of transferring all important parts to the first class reserves, and of giving up certain parts permanently for cultivation. Some progress has now been made in this matter and the transfers have commenced, but it will take some years yet to complete the business. It has been recognised that this is the most urgent part of the Department's work.

59. The Central Provinces were repeatedly visited by the late Inspector General of Forests, who drew up a detailed Report on the management of some of the more important areas in 1876, and left copious notes regarding others. Dr. Schlich visited the Central Provinces in the winter of 1882-83, and drew up a Report on the management of the forests, which is dated the 1st June 1883. After giving a general sketch of the forests, it deals with the Areas and Boundaries of the reserves, the Organization and Protection of the Forests, Cultural Operations, the working of the Forests, and the Financial Results. As regards areas, &c., it gives the following data :—

	Square miles.
Assessed cultivated area	22,095
„ grazing lands	2,937
Area of private forests	34,937
„ of Government forests	19,719
Other areas	4,757
Total area	84,445

The area of the Government forests represents 23 per cent. of the total area, while the private forests contain 16,482 square miles of unculturable

waste, representing 20 per cent. of the total area. The population amounted to very nearly 10 millions, and it had, according to the last Census, increased at the rate of 25 per cent. in nine years, so that its doubling during the next 40 or 50 years is by no means impossible. The private forests, which now comprise 34,937 square miles, are rapidly disappearing under the axe and the plough, and considering that, even now, the demands on the Government forests are already great, it follows that they will be enormously increased as the population increases and cultivation is extended. Hence it is essential that the area of Government forests should not be much reduced and that they should all be managed as first class reserves, if it is desired to provide the necessary forest produce for these inland provinces.

60. The Chief Commissioner has lately taken up the question of the Zemindari forests, and, in a Memorandum of the 21st September 1883, has drawn attention to their rapid destruction chiefly in consequence of Railway extension. He has called for information on a variety of points, with the view of considering what steps shall or can be taken in order to arrest the further destruction of the forests. These measures may help to retard the evil, but the only satisfactory remedy will be found in the systematic conservancy of the Government forests.

61. Fire protection has made more progress in the Central Provinces than in any other province; the area under protection amounts now to 1,366 square miles, against 1,118 square miles in 1879-80.

The financial results compared with those of five years ago are as follow:—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	10,06,724	4,84,150
„ 1883-84	9,94,769	5,58,711

British Burma.

62. It has already been stated that the Burma Forest Act was passed in 1881, and that Rules were promulgated under several of its sections.

The late Inspector General of Forests made an extended tour in Burma in the beginning of 1880, and submitted a detailed Report on Forest Administration in that province in January 1881.

63. Burma is the principal source of *teak* timber, which may justly be called the prince of woods. It combines in a remarkable manner many useful qualities; hence its employment for a variety of purposes in Europe, India, and other countries is steadily extending. Teak has held its own against all wood exported from North and South America, and against those which have been discovered in Australia and South Africa. Although the export of teak from Bangkok has considerably increased of late years, sufficient is known of the sources of the teak supply to make it clear that Burma must remain the principal source of export of this timber. To give an idea of the importance of this trade it may be mentioned that in 1883-84 no less than 158,408 tons were exported, which represented a value of Rs. 1,58,96,271. This timber, together with that used in the province, comes partly from forests situated in British Burma, but chiefly from forests situated beyond the frontier. The proportion may roughly be taken at present as 1 to 4; in other words only about one-fifth of the teak comes at present from British forests. Considering that the forests beyond the frontier are not subject to conservancy measures, their resources must be exhausted in course of time. The great importance of the British forests becomes, therefore, at once apparent; hereafter they will have to supply as much timber as is now derived from all sources, or else the supply of this important commodity must fall off. This fact does not seem to have been fully admitted until comparatively lately, and, in consequence, all attempts at forest conservancy in British Burma had to face a most determined resistance on the part of the timber dealers. Although, therefore, conservancy was started comparatively early, it is only of late years that the proper demarcation and settlement of reserves, or permanent forest estates, have made good

progress. In 1879-80 the area amounted to 1,612 square miles, while it had risen to 3,759 square miles on the 1st April 1884. Further additions are contemplated.

64. Another point of difficulty in this respect consists in the fact that most of the valuable teak localities are inhabited by Karens, a wandering tribe, who cut down a fresh piece of jungle every year, burn it and cultivate the site, and then abandon it. This difficulty has of late years been overcome by assigning to each village, or a number of villages, a certain defined area within which the inhabitants may cut their taungyas, or hill gardens. These blocks are in many instances situated within the boundaries of the reserves. Upwards of 400 square miles have up to date been assigned in this manner.

65. The area of plantations has, during the last five years, risen from 5,904 to 13,415 acres, a satisfactory progress which is mainly due to the enlistment of the services of the Karens, who are permitted to cut taungyas in certain localities, subject to the condition that they plant teak with their crops. In this manner natural reproduction is assisted at a reasonable outlay, and it is hoped in this way to increase the production of teak, so as to keep pace with the rising demand on the forests.

Less progress has been made in fire protection, the protected area having risen during the last five years from 151 to 261 square miles. As soon as the demarcation and settlement of reserves has been completed, fire protection will receive more extended attention.

66. The Receipts and Surplus derived from the British Burma forests show excellent progress, as will be seen from the following data:—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	11,80,190	4,26,700
„ 1883-84	25,09,275	12,91,451

Until the 1st January 1882 a duty of 7 per cent. *ad valorem* was levied on all timber imported into British Burma by the Salween River. From the above-mentioned date it was reduced to 1 per cent., and subsequently to ½ per cent., an amount sufficient to cover the expenses of controlling the timber operations on the Salween. But for this reduction the Receipts and Surplus would have been 2½ lakhs of rupees more than they were in 1883-84.

Generally speaking, the Burma forests are the most valuable in India, and they must be most carefully looked after, not only for the sake of the considerable revenue which they yield to the State, but also in order to perpetuate a sufficient supply of teak timber to India and the world generally.

67. After a lengthy discussion, a liberal concession was given to a Mr. Routledge in England, in 1882, for the conversion of bamboos into paper pulp, but up to date nothing has come of it. It seems, however, likely that bamboos, of which Burma possesses an immense wealth, may some day become of special importance in this respect.

Assam.

68. Owing to the climate of Assam being specially adapted for the cultivation of tea, forest conservancy is of greater importance in this province than would otherwise be the case. As yet Assam has a large area of forests, but in the more accessible districts it has already been sadly reduced. Hence the demarcation of reserves has been pushed on of late years. The area stood at 2,015 square miles in 1879-80, and it is now 2,314 square miles.

Fire protection has made some progress, the protected area having risen from 144 to 148 square miles during the last five years.

69. The area of plantations has during the same period risen from 1,088 to 1,296 acres. Of the latter area, 1,023 acres are stocked with *Ficus elastica*, the Assam India-rubber tree. Assam and the surrounding districts are the home of this tree, which is the source of a considerable export, amounting to some 600 tons per annum, valued at 12 to 13 lakhs of rupees. The mode of

tapping the rubber trees is generally most wasteful, and as they are scattered over a very wide extent of country, it has been found impossible to protect them. All that can be done is to derive a revenue from existing sources, and to establish, with the proceeds, compact plantations in the most favourable localities. This policy has lately been urged upon the Chief Commissioner of Assam by the Government of India.

70. The Receipts and Surplus of the Assam Forest Department in 1879-80 compare thus with those of 1883-84 :—

	Receipts. Rs.	Surplus. Rs.
In 1879-80	1,64,335	31,506
„ 1883-84	2,11,445	11,883

Railways are now beginning to make their way into Assam, and with their progress the returns from the forests are likely to increase considerably. In the case of the Makum line a so-called timber concession has been given, by which the Railway has received, in one year, wood valued at Rs. 83,538. It is undesirable to grant such undefined concessions in future.

Coorg.

71. Forest conservancy in Coorg has made steady progress during the last five years, but no stirring events have occurred. Demarcation has been proceeded with; measures have been taken for the preservation of the Devara Kadus or "sacred groves;" sandalwood is being steadily planted; the construction of a tramway from the Nalkeri Forest to Hunsur (in Mysore) has been considered, and a part of the line has been sanctioned.

Ajmere.

72. The waste lands and hills in the Government villages of Ajmere and Merwara were originally the absolute property of the State, but at the settlement of 1850 they were included in the Shamilat or common land of the villages, under the condition that the villagers themselves would plant trees and preserve the jungle to a reasonable extent. This engagement they never attempted to keep, and, as the lands became gradually denuded, pasture failed, wood became scarce, the water-supply in wells and streams became uncertain, and the smaller tanks were silting up at an alarming rate. It was decided in 1871, in consequence of proposals made by the Inspector General of Forests, on the occasion of a new settlement, to acquire for forest purposes certain areas on the hills of these districts. For this end the Ajmere Forest Regulation of 1874 was passed, under which lands can be taken up, certain rights being secured to the villages. In this way 101 square miles had been taken up in 1879-80, and placed under systematic management and protection.

73. In December 1878 the Inspector General visited Ajmere and Merwara, and submitted a Report on the forests in these Districts in November 1879, in which he gave a general account of the forests and described the advantages expected from their protection. Since then the forests have been managed on the lines laid down in that Report. The area of the reserves has now been increased to 139 square miles, and some further extensions are contemplated. Numerous experiments to test the effect of forest protection on the rainfall, humidity, dew, temperature, drainage, water-supply in wells, springs, streams and tanks have lately been started; in short, Ajmere has been selected as an experimental area, and the results of the observations and measurements will be of the greatest interest as regards the effects of forest conservancy generally. One point has already been settled, and that is the considerable improvement in the production of grass due to protection.

Though the forests do not yet pay for their management, the Receipts are gradually rising; they were Rs. 1,861 in 1879-80 and Rs. 8,198 in 1883-84.

Andamans.

74. The Andamans were botanically explored by the late Mr. S. Kurz, and the vegetation described by him in a Report published in 1870. Subsequently,

in 1874, Mr. A. L. Home, Deputy Conservator of Forests, visited the country in the vicinity of Port Blair and reported on its timber resources.

75. Forest operations were commenced some years ago, in order to supply the Settlement with the necessary timber, and gradually an attempt was made to bring the more valuable species of timber into the Indian and Home markets; and as the operations promised to become of importance, a trained Forest Officer was set aside for the Andamans in 1882. The islands are said to be rich in timber, of which Padouk, *Pterocarpus indicus*, is the most important. The latter has been introduced into the Calcutta market, chiefly as scantlings, and it has also been sent home. Arrangements have lately been made to supply the Indian Telegraph Department with posts, while sleepers have been supplied to the Indian Railways for some years past.

The Forest Officer is now engaged in a detailed examination of the timber resources of the islands, while further attempts are being made to extend the export.

Biluchistan.

76. The necessity of forest conservancy in Biluchistan made itself felt as soon as the District came under British control. Accordingly a Forest Officer has been temporarily entertained since 1880, and certain tracts situated in the vicinity of Sibi were taken under conservation. During the last two years more vigorous action has been taken by the Government, owing to the scarcity of forest produce in the vicinity of the military stations, and in 1883 a specially qualified Forest Officer was deputed to report on the whole subject. It has thus come to light that, while an area of 200 square miles of Juniper forests is available near Ziarat, the existing sources in the vicinity of Quetta will not yield more than twelve years' supply of forest produce for that station. A trained Forest Officer has now been posted to Biluchistan, whose business it will be to manage the existing natural forests in Ziarat and near Sibi; and the advisability of making considerable plantations in the vicinity of Quetta and other military stations is under consideration. The Railway now under construction from Sibi to Quetta will also require large quantities of timber and fuel, and no time must be lost in advancing forest operations.

Berar.

77. Up to the year 1879-80 an area of 1,388 square miles had been declared Reserved or State Forests under the existing Forest Rules, while 2,977 square miles were classed as District Forests.

It has already been mentioned that a new Forest Regulation has been under consideration for some time, and that it is likely to shortly become law. In the meantime, much time and trouble have during the last few years been devoted to the re-classification of all waste lands by dividing them into—

(i) Wood lands.
(ii) Grass lands.
(iii) Grazing grounds.
(iv) Lands available for the extension of cultivation.

78. Dr. Schlich visited Berar in the spring of 1883, and in his Report showed that the general distribution of lands is as follows:—

	Area, in square miles.
Cultivated	11,346
Culturable waste	1,713
Unculturable waste	4,652
Total ...	17,711

About two-thirds of the land are under cultivation. It is estimated that an area of 4,000 square miles under forest, or about one-fourth of the total area, is necessary for the requirements of the province, and as the total area at the disposal of Government amounts to 4,395 square miles, it is evident that only limited portions of it can be made available for further extension of cultivation.

79. The area of reserves has now been increased to 1,635 square miles, and the organization of the staff has lately been perfected by connecting the Forest Officers with the Civil Officers. The area protected against fire has, during the last five years, risen from 716 to 972 square miles, and the area of plantations from 1,504 to 2,660 acres. The Receipts are about the same now as they were five years ago, while the Surplus is somewhat lower.

The Melghat Reserves, covering an area of 609 square miles, are most valuable estates, which have been very considerably improved during the last five years by fire protection, planting, the construction of roads, &c. They will yield a gradually increasing revenue, which is sure to be hereafter a multiple of what it is now.

Forestry in Native States and abroad.

80. The Government of India has taken advantage of every opportunity to encourage forest conservancy in Native States. In 1881 Mr. Brandis advised the Kapurthala State regarding their forests in Oudh. A superior Forest Officer of the staff under the Government of India is at this moment Conservator of Forests in Rewah. A Forest Ranger has been made over to Oodeypore, and several men sent by Native States are now under training at the Dehra Dun Forest School. It is satisfactory to notice that the importance of forest conservancy is being recognised in all the better governed Native States.

81. During the last five years the Government of India has assisted the Governments of the Mauritius, Ceylon, Cyprus, and the Cape, to all of which places Indian Forest Officers were lent for the purpose of advising them on forest conservancy, or of assisting them to carry it into effect.

General Results.

82. The following data show the progress made during the last five years in the formation of reserved forests, fire protection, and plantations, with the financial results, in the provinces under the Government of India :—

		Years.	
		1879.	1884.
Area of reserved forests (in square miles) ...	...	31,785	36,497
Area protected against fire („ „) ...	...	3,710	4,776
Area of plantations (in acres) ...	...	30,565	43,453
Receipts	...	Rs. 49,18,957	73,73,315
Surplus	...	„ 17,36,937	30,44,774

83. The Financial Results in the three presidencies were as follow :—

Presidency.	Receipts.		Surplus.	
	1879-80.	1883-84.	1879-80.	1883-84.
	Rs.	Rs.	Rs.	Rs.
Bengal	49,18,957	73,73,315	17,36,937	30,44,774
Madras	6,26,168	9,53,704	77,641	1,66,971
Bombay	15,24,712	25,03,100	4,47,723	9,38,928
Total ...	70,69,837	1,08,30,119	22,62,301	41,50,673

The Receipts have, during the last five years, increased by more than 37½ lakhs, and the net Surplus by nearly 19 lakhs of rupees. Expressed in pounds sterling, the Receipts amount roughly to one million pounds, and the net Surplus, after meeting cost of establishments, working, protection, and improvement, to four hundred thousand pounds.

CHAPTER I.

Area and Boundaries.

General.

84. The following table exhibits the forest areas, the property of Government, which were partially or entirely under the management and control of the Forest Department on the 1st April 1884:—

Province. Name.	Area, in square miles.	Forest area, in square miles. Reserved Forests.	Protected Forests.	District Forests.	Total.	Percentage of forests to whole area of province.	Remarks.
Bengal	1,50,603	4,635	2,300	4,325	11,260	7·47	
North-Western Provinces and Oudh.	1,06,080	3,331	99	118	3,548	3·34	
Punjab	1,07,010	1,022	311	2,910	4,243	3·97	
Central Provinces ...	84,445	*19,429	...	319	19,748	23·39	* 3,435 square miles are 1st class reserves; the rest 2nd class.
British Burma ...	87,220	†3,759	...	...	3,759	4·31	† 413 square miles are taungya areas.
Assam	45,838	2,314	863	6,422	9,599	20·96	
Coorg	1,583	233	...	...	233	14·72	
Ajmere	2,711	139	...	...	139	5·13	
Biluchistan	...	...	...	8	8	...	
Total ...	5,85,490	34,862	3,573	14,102	52,537	...	
Berar	17,711	1,635	...	2,760	4,395	24·82	
Total Bengal Presidency ...	6,03,201	36,497	3,573	16,862	56,932	...	
Madras	1,39,365	2,870	...	...	2,870	2·06	
Bombay	1,24,182	9,398	5,012	...	14,410	11·60	
Grand Total ...	8,66,748	48,765	8,585	16,862	74,212	...	

85. The area of reserves, the only class of forests the permanency of which has been entirely secured, though aggregating 48,765 square miles, amounts to little more than $5\frac{1}{2}$ per cent of the total area of British India, and is but very unequally divided amongst the several provinces, as may be seen from the following statement:—

Province.	Percentage of reserved forest area.
Bengal	3·08
North-Western Provinces and Oudh	3·14
Punjab	·96
Central Provinces	23·01
British Burma	4·31
Assam	5·05
Coorg	14·72
Ajmere	5·13
Biluchistan	...
Berar	9·23
Madras	2·06
Bombay	7·57

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The statement regarding the area of district forests, being merely an estimate, has in this year's table been reduced by nearly 2,000 square miles. This change is partly due to the formation of reserves, partly to corrections in the estimate, and partly to the retransfer of forest areas to district management; for, in that respect, the above table contains only a portion of all forest lands still at the disposal of Government.

86. The following increase has taken place in the reservation of forest areas during 1883-84 :—

	Square miles.
Reserves	873
Protected forests	15
Total ...	888

The changes that have taken place during the year are distributed amongst the several provinces in the following manner :—

Province.	AREA, IN SQUARE MILES.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	313	...	...	25	288	...
North-Western Provinces and Oudh ...	41	...	...	...	41	...
Punjab	125	...	...	...	125	...
Central Provinces	...	1	...	...	...	1
British Burma	332	...	...	...	332	...
Assam	137	...	201	...	338	...
Coorg	...	...	...	...	...	...
Ajmere	17	...	...	...	17	...
Total ...	965	1	201	25	1,141	1
Berar	246	...	...	...	246	...
Total Bengal Presidency ...	1,211	1	201	25	1,387	1
Madras	88	...	...	...	88	...
Bombay	...	425	...	161	...	586
Grand Total ...	1,299	426	201	186	1,475	587

87. In addition to the Government forests enumerated in the foregoing paragraphs, the Forest Department is in charge of a considerable area of leased forests, in which up to the end of the year the following reserves, constituted similarly to reserves under the Indian Forest Act, have been formed :—

Province.	From whom leased.	Area, in square miles.		Remarks.
		Total area of forest leased.	Specially reserved.	
North-Western Provinces and Oudh.	Tehri-Garhwal Jaghirs ...	...	17	The area reserved on the Bhagirathi is not given in the North-Western Provinces and Oudh Report.
	Raja of Tehri-Garhwal ...	...	30	
	Raja of Bashahr ...	...	2	
Punjab	Raja of Bashahr ...	...	180	
	Raja of Chamba ...	...	196	
Total Bengal Presidency ...	.....	...	425	
Madras	Raja of Sandur ...	62½	...	
	Raja of Nilambur ...	200	...	
Grand Total ...	.....	262½	425	

88. The cost of demarcation and maintenance of old boundary lines during the year was as follows :—

	Rs.
In the Bengal Presidency	66,636
„ Madras „	17,975
„ Bombay „	5,968
Total ...	90,579

At the same time the following amounts were paid as compensation on account of land acquired and rights commuted :—

	Rs.
Bengal Presidency	12,288
Madras „	8,366
Bombay „	20,890
Total ...	41,544

Bengal.

89. The changes in the areas under the management of the Forest Department during the year under review were as follows :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	4,322	313	.....	4,635
Protected „	2,325	25	50	2,300
District „	5,107	20	802	4,325
Total ...	11,754	358	852	11,260

The bulk of the additions, 267 square miles, occurred in Orissa, where the Angul Forests have now been brought under the operation of Chapter II of the Indian Forest Act. The area of reserves represents now about 3 per cent. of the total area of the province. Some of the finest sal forests in India in the Khondmals of Bod in Orissa were examined. They are situated within the sphere of probable railway extension, and must, even at the risk of some inconvenience, be secured and brought under reservation at as early a date as possible. The Government of India has noticed the great importance of this question in its review of the Bengal Forest Report. Corrections of previous estimates and returns have caused large exclusions under the head of District Forests.

The following data show the work done with regard to forest demarcation :—

	Length of boundary, in miles.	Cost per mile, in rupees.
New demarcation	111	8
Clearing old boundaries and repairing boundary marks. ...	559	13

The new demarcation took place mainly in Orissa, where labour is cheap; the repairs in Darjeeling and Jalpaiguri, where the reverse is the case.

North-Western Provinces and Oudh.

90. The changes in the statement below are due to the exclusion of leased forests in the School Circle from the area of reserves, and the addition of 42

square miles of new reserves in Gorakhpur. The reserves now represent about 3 per cent. of the total area of the province :—

Circle.	Area of reserved forests, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Central	1,473	1	.....	1,474
Oudh	1,090	42	.....	1,132
School	727	.....	2	725
Total ...	3,290	43	2	3,331

In addition to the above, the area of reserved forests formed under leases amounts to 49 square miles.

No alterations have taken place in the areas of protected and district forests, the Central Circle alone containing 99 square miles of the former and 118 square miles of the latter.

The areas still at the disposal of Government, which might be constituted reserved forests, are very limited, and it cannot be expected that the reserves will, unassisted by supplies from private forests, suffice to meet the demands of the country, with regard to the supply of timber and other forest produce. That private forests, if left to unrestricted management, will some day cease to yield their share of the forest produce required by the market, is an eventuality we dare not leave out of consideration, and the question of augmenting the forest area under conservative management must not be lost sight of. Whether this is to be done by the acquisition of land on the part of Government, or by interference with the management of private forests, is a question that will have to be considered at an early date.

The demarcation of the forests in the Central and School Circles is reported as complete and well maintained. In the Oudh Circle also the work is nearly finished; but it is stated that for about 200 miles the boundary is a shallow trench, and that some more permanent demarcation is required.

Punjab.

91. The following statement exhibits the changes that have taken place during the year in the areas under the management of the Forest Department :—

Class of forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved forests	897	125	...	1,022
Protected „	311	...	...	311
District „	3,155	1	246	2,910
Total ...	4,363	126	246	4,243
Reserved forests formed under leases ...	331	45	...	376
Grand Total ...	4,694	171	246	4,619

REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA

FOR THE YEAR

1884-85.

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BY

B. RIBBENTROP,

OFFICIATING INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

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GOVERNMENT CENTRAL BRANCH PRESS.

1886.

134460

SIMLA :
PRINTED BY THE SUPERINTENDENT, GOVERNMENT
CENTRAL BRANCH PRESS.

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CHAPTER I.

Area and Boundaries.

AREA.

General.

The following table exhibits the Forest Areas, the property of Government, which were partially or entirely under the management and control of the Forest Department on the 1st April 1885 :—

Province. Name.	Area, in square miles.	Forest area, in square miles. Reserved Forests.	Protected Forests.	District Forests.	Total.	Percentage of Forests to whole area of Province.	Remarks.
Bengal	150,589	4,882	2,298	4,313	11,493	7·63	
North-Western Provinces and Oudh.	106,080	3,390	99	118	3,607	3·40	
Punjab	106,772	1,015	311	2,908	4,234	3·96	
Central Provinces ...	84,445	*19,440	...	404	19,844	23·50	* 3,505 square miles are 1st class Reserves; the rest 2nd class.
British Burma	87,220	†3,942	...	...	3,942	4·52	†414 square miles are *taungya* areas.
Assam	45,838	2,342	863	6,390	9,595	20·93	
Coorg	1,583	238	...	...	238	15·03	
Ajmere	2,711	144	...	...	144	5·31	
Baluchistan	...	...	...	8	8	...	
Total ...	585,238	35,393	3,571	14,141	53,105	9·07	
Berar	17,711	1,544	...	2,820	4,364	24·64	
Total Bengal Presidency	602,949	36,937	3,571	16,961	57,469	9·53	
Madras	141,028	2,980	‡4,884	1,156	9,020	6·40	‡ "Reserved Lands."
Bombay	124,300	9,297	4,648	...	13,945	11·22	
Grand Total ...	868,277	49,214	13,103	18,117	80,434	9·26	

2. The area of Reserved Forests includes in several provinces forests declared to be reserved under section 34 of the Indian Forest Act; and in these the rights of private persons have still to be settled in all such cases where they have not, previous to such declaration, been enquired into, settled, and recorded in a manner considered to be sufficient by the Local Government, or have subsequently been settled under the provisions of Chapter II of the Forest Act. Settlements of such Reserves are in progress in several provinces. It is hoped that in the next Review it will be possible to distinguish between Reserves finally settled and those in which a settlement of rights has still to take place.

It is gradually becoming better understood that the position of a Forest Settlement Officer is simply that of a Court standing impartially between the proprietor and the right-holder to define the legal status of a forest property, and who in that respect is as independent of the executive as any other Civil Court. It still frequently happens, however, that Forest Settlement-Officers make administrative settlements, instead of confining themselves to their legal duties;

and it also sometimes occurs that they are in this respect guided by instructions from authorities who would not interfere with other Civil Courts. The Government of India has had occasion, during the past year, to point out, in regard to several cases which were brought to notice, that Forest Settlements should be carried out more strictly in accordance with the provisions of the Forest Act.

3. The Reserved Forests, which form a little more than $5\frac{1}{3}$ per cent. of the total area of British India, are distributed among the several provinces in the following proportions of their total areas :—

Province.	Percentage of Reserved Forest area.
Bengal	3·24
North-Western Provinces and Oudh	3·19
Punjab	0·95
Central Provinces	23·02
British Burma	4·52
Assam	5·11
Coorg	15·03
Ajmere	5·31
Baluchistan	...
Berar	8·72
Madras	2·11
Bombay	7·48

4. The following increase has taken place in the reservation of forest areas during 1884-85 :—

	Square miles.
Reserves	449
Protected Forests	4,518
Total	4,967

The changes that have taken place during the year are distributed amongst the several provinces in the following manner :—

PROVINCE.	AREA, IN SQUARE MILES.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	247	...	...	2	245	...
North-Western Provinces and Oudh	59	...	...	...	59	...
Punjab	...	7	...	...	...	7
Central Provinces	11	...	...	...	11	...
British Burma	183	...	...	...	183	...
Assam	28	...	...	...	28	...
Coorg	5	...	...	...	5	...
Ajmere	5	...	...	...	5	...
Total	531	...	...	2	529	...
Berar	...	91	...	...	...	91
Total Bengal Presidency	440	...	...	2	438	...
Madras	110	...	4,884	...	4,994	...
Bombay	...	101	...	364	...	465
Grand Total	449	...	4,518	...	4,967	...

5. In addition to the Government Forests enumerated in the foregoing paragraphs, the Forest Department is in charge of a considerable area of Leased Forests, in which up to the end of the year the following Reserves, constituted similarly to Reserves under the Indian Forest Act, have been formed :—

Province.	From whom Leased.	Area, in square miles.	Remarks.
North-Western Provinces and Oudh.	Tehri-Garhwal Jaghirs	9	The area reserved on the Bhagirathi in the Central Circle is not given in the North-Western Provinces and Oudh Report.
	Raja of Tehri-Garhwal	28	
	Raja of Bashahr	2	
Punjab	Raja of Bashahr	180	
	Raja of Chamba	196	
Total Bengal Presidency	....	415	
Madras	Raja of Sandur	62	
	Raja of Nilambur	200	
Grand Total ...	....	677	

6. The cost of demarcation and maintenance of old boundary lines during the year was :—

	Rs.
In the Bengal Presidency	51,581
„ Madras „	23,063
„ Bombay „	6,103
Total ...	80,747

And for compensation for rights commuted and for the acquisition of land there were paid :—

	Rs.
In the Bengal Presidency	68,013
„ Madras „	11,356
„ Bombay „	40,176
Total ...	1,19,545

Bengal.

7. The changes in the areas under the management of the Forest Department during the year under review were as follow :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	4,635	264	17	4,882
Protected „	2,300	...	2	2,298
District „	4,325	...	12	4,313
Total ...	11,260	264	31	11,493

The principal increase is in the Singhbhum sub-division of Chota Nagpore. Much remains still to be done in the matter of the acquisition of Government Forests in Bengal, and enquiries are being instituted to ascertain the area of private forests, and also that of Government waste land suitable for the formation of Fuel and Fodder Reserves.

The proportion of Reserved Forests in the whole of Bengal is still only $3\frac{1}{4}$ per cent. of the whole area of the country, and the great bulk of the forests lies in comparatively remote parts of the province. It is true that the climate of Bengal may not necessitate such a large direct and indirect consumption of timber as in other provinces; still the country is thickly populated, and very large areas are absolutely without forests under Government control.

North-Western Provinces and Oudh.

8. The changes in the areas of the various classes of forests are :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	3,380	85	*36	†3,429
Protected „	99	...	...	99
District „	118	...	...	118
Total ...	3,597	85	36	†3,646

* Of this, 4 square miles are due to corrections of clerical errors. | † Includes 39 square miles of Leased Forests.

The area of these forests is still less than $3\frac{1}{2}$ per cent. of the area of the province. An exhaustive enquiry into the question of Fuel and Fodder Reserves has led the Lieutenant-Governor to the opinion that the acquisition of fresh lands for fodder purposes would be difficult and expensive. Fodder is only an accessory, not a main produce of forests; but there is no doubt that the Forest Reserves will, under a conservative treatment, yield very large quantities of grass. It is satisfactory to know that 17 square miles of grass lands in Oudh, which it was at one time proposed to reclaim for cultivation, have been made into Grazing Reserves, and placed under the management of the District Officers.

Punjab.

9. The changes made during the year are exhibited as follows :—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	1,022	...	7	1,015
Protected „	311	...	...	311
District „	2,910	...	2	2,908
Total	4,243	...	9	4,234

Although no increase in the area of the forests under the control of the Forest Department has taken place during the year, progress is nevertheless being made in the Rawalpindi and Kulu Districts, where fresh areas are shortly to be made Reserves. In the same districts, as well as in Kangra and Gujranwala, large areas are being selected, demarcated, and examined with the view of being made Protected Forests.

10. Central Provinces.

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests, 1st class	3,435	70	...	3,505
Reserved „ 2nd class	15,994	...	59	15,935
District „	319	85	...	404
Total	19,748	155	59	19,844

The process of transferring areas from 1st to 2nd class management has been continued, the valuable Bhandak Forest having now come under closer forest conservancy. The total area of the 1st class Reserves is, however, still only 4·15 per cent. of the area of the province.

These Reserves, both 1st and 2nd class, have, with a few unimportant exceptions which were constituted under Chapter II, been declared by the Local Government to be reserved under Section 34 of the Forest Act, and it is understood that no further enquiry into any rights in them is needed.

11. **British Burma.**

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	3,759	210	27	3,942
Protected „	...	...	...	...
District „	...	...	...	...
Total	3,759	210	27	3,942

The proportion of Reserved Forests to the area of the province is still only 4½ per cent.; but 800 square miles in Tenasserim and 125 in Pegu are being examined with a view to being formed into Reserves.

Assam.

12. The changes in the constitution of State Forest property were as follow:—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	2,314	29	1	2,342
Protected „	863	...	...	863
District „	6,422	...	32	6,390
Total	9,599	29	33	9,595

There are proposed increases to the reserved area of 4 square miles in Kamrup and 243 square miles in Lakhimpur.

Coorg.

13. The reserved area was increased by 5 square miles.

The question of a Forest Law for Coorg, after having been long pending, has almost been brought to a solution. The introduction of such a measure will enable the settlement of the Ghat Forests to be undertaken, as well as that of the old Reserves, which seem to require resettlement.

Finality in the settlements will also assist the operations of the working-plans, for which a commencement has been made.

Ajmere.

14. The area of Reserves has been increased by 5 square miles, the total now comprising 144 square miles. As it is not likely that the area of this class of forest property can increase, and as the total area of 144 square miles cannot suffice for the requirements of the country, it is satisfactory to see that some 52 square miles of forests are about to be made into Village Forests.

Demarcation has made satisfactory progress, the recording of rights is nearly completed, and a commencement has been made in mapping the forests.

Berar.

15. The changes in the constitution of the Berar Forests during the year under review are thus shown:—

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	1,635	20	111	1,544
Protected „	...	...	...	...
District „	2,760	99	39	2,820
Total	4,395	119	150	4,364

The changes are mostly due to reclassification. The survey of the Melghat and South Berar Forests has again made good progress, the total area surveyed being now 375 square miles, of which 207 square miles are on a 2-inch and 168 square miles on a 4-inch scale.

Madras.

16. The Forests under the control of the Forest Department in the Madras Presidency are still in a transition stage as regards their classification and nomenclature. The classification is, as far as it has hitherto gone—

	Square miles.
Reserved Forests	1,121
Forests treated as Reserves under old rules	1,859
Leased Forests	262
Reserved Lands	4,884
Other Forests	1,156
Total ...	9,282

The old Reserves, the Reserved Lands, and the "Other Forests" will all gradually pass through the Forest Settlement Officer's hands. They will all ultimately become either Reserved Forests or District Forests, there being no Protected Forests in Madras.

17. Bombay.

Class of Forests.	Area, in square miles.			
	At the commencement of the year.	Added.	Excluded.	At the close of the year.
Reserved Forests	9,398	367	468	9,297
Protected „	5,012	180	544	4,648
District „	...	...	...	...
Total	14,410	547	1,012	13,945

These reductions are mainly due to the disafforestment going on as a result of the Forest Settlement Officer's operations, and they will continue until the Forest Settlement is completed. This was understood from the beginning, the Bombay Forests having been mostly gazetted under Section 34 (Chapter V) of the Forest Act, when some 15,000 square miles were placed under management, partly as Reserves, partly as Protected Forests. What has been going on since is—

(1) The final settlement of both Reserved and Protected Forests.

(2) Alienation of parts of these areas due to the Forest Settlement Officer's proceedings.

(3) Transfer of parts of the Protected Forest area to "Reserved Forests."

BOUNDARIES.

Bengal.

18. With regard to boundaries, information was sought in the following form, but could not be completely obtained in time :—

I.—Boundaries cleared and demarcated...	(*a*) Mileage chargeable to A-VIII (*a*) (Demarcation). (*b*) Mileage chargeable to A-VIII (*e*) (Fire-protection). (*c*) Number of posts or pillars.
II.—Natural boundaries uncleared, but along which posts or pillars are erected.	(*a*) Length in miles. (*b*) Number of posts or pillars.
III.—Natural boundaries, along which posts, &c., are *not* erected.	Length in miles.
Total for each forest ...	(*a*) Length of all boundaries in miles. (*b*) Number of posts or pillars.

In the meanwhile both new demarcation and the maintenance of old boundaries and boundary marks continue satisfactorily.

The above form might with advantage be used in all provinces, with perhaps the addition under I of mileage chargeable to A-VII (*a*) (Roads).

North-Western Provinces and Oudh.

19. In the Central Circle the demarcation is complete in all but the Ganges Division, and maintenance is satisfactory. In the Oudh Circle demarcation is understood to be complete, but more detailed and frequent inspection is required. In the School Circle the maintenance of the boundaries and marks is not so satisfactory, especially in the hill forests.

Punjab.

20. In the Punjab fair progress has been made in the work of demarcating boundaries.

Central Provinces.

21. In the Central Provinces 2,159 miles, out of 2,522 miles, of boundary in the 1st class Reserves are reported as cleared. The important work of checking the boundaries of the 2nd class Reserves has been carried on in twelve Districts, and the results are reported to be satisfactory; but it is not yet known how much still remains to be done.

British Burma.

22. In both Circles demarcation, maintenance, and inspection received attention. In the Rangoon Division the boundaries of all the Reserves in the Hlaing sub-division were completely renewed. This was rendered necessary on account of encroachments.

Assam, Berar, Ajmere, Coorg, Baluchistan.

23. In Assam boundary work received considerable attention; so also in Berar, Ajmere, and Coorg. In Baluchistan no new demarcation is required, only small areas of State Forests having as yet been set apart.

CHAPTER II.

Surveys and Working-Plans.

Surveys.

24. During the year under review the principal operations of the Forest Survey Branch were carried on in the Melghat Forests in Berar, with smaller parties in South Berar, in Garhwal in the North-Western Provinces, and in Chamba and Bashahr in the Punjab.

The area plane-tabled was 410 square miles, against 74 square miles in the previous year; and 1,017 square miles were triangulated and 168 square miles traversed, against 1,103 and 566 square miles, respectively, last year.

The expenditure amounted to Rs. 54,627, against Rs. 48,156 in the previous year.

In British Burma the Topographical Survey Party completed 315 square miles on the 4″ scale at a cost of Rs. 320 per square mile, and 37 square miles on the 2″ scale at a cost of Rs. 135 per square mile, the average for the whole being Rs. 298 per square mile, or Rs. 21 cheaper than last year.

In Bombay the forests are being surveyed by the Topographical Survey Department, the work this year being in the Tanna, Panch Mahals, and Dang Districts.

In other provinces nothing was done but minor surveying work of particular blocks of forests, mapping from previous data, checking of boundaries, &c.

25. The Surveyor General in his review of the Forest Survey Branch Report, and in several special letters on the subject addressed to the Government of India, remarked, with reference to Forest Surveys that were being at the time carried out in the Punjab and in Berar, that the existence of a separate Forest Survey Branch was a mistaken policy. After some correspondence on the subject, a meeting was convened by the Secretary in the Revenue and Agricultural Department, and it was decided that the Revenue Survey and that forming part of the Forest Department had as yet in nowise clashed, nor had there ever been any necessity for working twice over the same ground by parties of each of the two separate surveys; but that, in order to avoid the possibility of this happening, Local Governments should give 18 months' notice of their requirements with regard to Forest Surveys, and that the agency by which such surveys should be executed should be settled in consultation between the Surveyor General and the Inspector General of Forests.

The desirability, if not the necessity, of having a separate Survey Branch, with a technical knowledge of Forestry, in charge of Forest Surveys, especially such as were intended to form the basis of working-plans, was recognized, as otherwise a much more detailed preliminary demarcation of the various features of the forests in the country to be surveyed would be required; and, finally, the high class work turned out by the Forest Survey Branch was unanimously acknowledged.

Working-Plans.

26. In the Pegu Circle, British Burma, working-plans for the Kôn Bilin Reserve of 24 square miles, the Kadin Bilin Reserve of 79 square miles, and the Mokka Reserve of 38 square miles were submitted for the professional inspection of the Inspector General of Forests. After examination, they were returned for local reconsideration of the remarks made by him with reference to some technical mistakes.

In the North-Western Provinces a working-plan for the Mundali Deodar Forest in the Jaunsar Himalaya was submitted, and was sanctioned by the Local Government. This plan is particularly detailed; and, though such detail was not required for a forest of as little importance as the Mundali Reserve, for

the produce of which no permanent demand is as yet ensured, and though such detail will be considerably curtailed in future plans for Deodar forests, both the theory and forestry contained in the plan are unquestionable, and it will always serve as an excellent model for the instruction of the students at the Forest School at Dehra.

Burma, the North-Western Provinces and Oudh, and the Punjab have organized special Divisions for the preparation of working-plans; and in Bombay sanction for the staff necessary for a similar organization was accorded during the year, and two Officers have for this purpose been added to the Controlling Staff. Assam and the Central Provinces are also about to start Working-Plans Divisions.

Annual plans of operation continue to have more and more attention paid to them, and every year witnesses a greater amount of method in the working of the forests.

27. Data for more or less elaborate forecasts for the working of the more important forests are being collected in almost every province, and a considerable number of working-plans are in an advanced state of preparation. Amongst the more important of those regarding which the Inspector General of Forests has information are the plans for the Chamba Leased Forests in the Punjab and the Changa Manga Plantation, for which a revised plan is being prepared; in the North-Western Provinces, working-plans for the Naini Tal and Ranikhet Forests will appear almost immediately, and an elaborate plan for the Dún Forests may be confidently expected within the present season. A working-plan for the Kheri Forests in Oudh is under consideration. These latter forests were inspected in March last by the Inspector General of Forests, who recorded some suggestions regarding the preparation of the working-plan in an Inspection Note on the Oudh Forests. An early completion of this working-plan is desirable; the construction of a tramway is under consideration in connection with it.

The collection of data for a working-plan of the Nalkeri Forest in Coorg has been completed, and the forecast may be expected within the present year. This plan is of considerable importance, as it is intended to open out the forest in question by means of tramways involving considerable expenditure.

28. There is a certain tendency in several provinces to frame working-plans too elaborately, and in this regard to follow too closely the examples of continental countries in Europe, where a more advanced state of forestry not only permits, but necessitates, greater accuracy in every detail. However desirable it may be to attain this state at some future time, the present organization of the Department in India does not permit of it; neither Officers nor time are available, nor is the money, and it is of great importance that less elaborate plans should be made, so that the whole forest area under the control of the Forest Department may be gone over more rapidly.

These remarks have special reference to forests whence the produce is extracted by purchasers, under what is known as the *kham tahsil* or *chauki* system. There is doubtless a certain number of important forests where a demand exists equalling or exceeding their capabilities, and for such more detailed working-plans are required.

CHAPTER III.

Protection and Improvement.

I.—PROTECTION.

General.

29. The following statement shows that 22,566 offences were taken cognizance of under the Forest Acts; that 17,076 of these were compounded, which may be accepted as a proof of admission of guilt on the part of the offenders; and that 5,490 cases were taken into Court, resulting in an average conviction of 76 per cent. These figures appear to prove a fair and just application of the penal sections of the Forest Acts:—

Province.	Number of new Cases during the year.			Proportion of Convictions to total number of Cases decided by the Courts, in Per cent.
	Taken into Court.	Compounded.	Total.	
Bengal	443	800	1,243	87
North-Western Provinces and Oudh.	230	570	800	82
Punjab	1,074	831	1,905	75
Central Provinces	312	11,160	11,472	86
British Burma	194	64	258	82
Assam	55	34	89	69
Coorg	8	...	8	100
Ajmere	47	48	95	90
Baluchistan	2	9	11	...
Andamans	12	...	12	33
Total ...	2,377	13,516	15,893	80
Berar	308	...	308*	84
Total Bengal Presidency ...	2,685	13,516	16,201	81
Madras	1,764	52*	1,816	70
Bombay	1,041	3,508	4,549	76
Grand Total ...	5,490	17,076	22,566	76

* Only in the Northern Circle. The figures for the Southern Circle have not been given separately.

30. **Bengal.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	443	800	1,243	87
1883-84	413	1,816	2,229	89
Increase or decrease in 1884-85	30	—1,016	—986	—2

There has been a large decrease in the number of cases compounded, due to closer supervision in the Sundarbans: this is very satisfactory. A high percentage of convictions has also been maintained.

31. **North-Western Provinces and Oudh.**

Circle.	Number of Cases.			Percentage of Convictions to total Number of cases decided by the Courts.
	Taken into Court.	Compounded under section 67 of the Forest Act.	Total.	
Central	118	438	556	88
Oudh	77	25	102	78
School	35	107	142	70
Total in 1884-85 ...	230	570	800	82
„ 1883-84 ...	157	557	714	82
Increase or decrease in 1884-85	73	13	86	...

Although there has been an increase over 1883-84, the total number of cases is still very small. The results in the School Circle are more satisfactory than they were in 1883-84.

An enquiry into the working of Section 67 of the Forest Act in the hands of Forest Officers showed that the powers thereby conferred had been very reasonably exercised.

32. **Punjab.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	1,074	831	1,905	75
1883-84	968	298	1,266	77
Increase or decrease in 1884-85 ...	106	533	639	—2

There has been an increase in the number of cases taken into Court, and also in those compounded; and the Lieutenant-Governor of the Punjab has called upon the district officials to assist in protecting the rights of Government in Forest property. A hitherto unsatisfactory state of things in the Muzaffargarh District, owing to a misinterpretation of the law, has been authoritatively set at rest by a ruling of the Chief Court of the Punjab on a test case sent for trial.

33. **Central Provinces.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	312	11,160	11,472	86
1883-84	341	9,850	10,191	82
Increase or decrease in 1884-85 ...	—29	1,310	1,281	4

The number of cases taken into Court has decreased, and the percentage of convictions has risen from 82 to 86.

It is doubtful if the numbers of cases given as compounded are, rightly considered, Forest offences. It is believed that the majority of them are cases of so-called illicit grazing. But when, as in the Central Provinces, the grazing arrangements are on a wholesale scale for an entire village at a time, and where all the cattle of the village are habitually herded and graze together, and where also one license is issued to the whole village in the name of the headman, who is made responsible for collecting the revenue in exchange for the commission he gets—and if, in such a case, every defaulter in the village is treated as having grazed his cattle illicitly (*i.e.*, not having paid his fees within the delay granted)—then it seems rather to partake of the nature of a breach of contract than of an offence against the Forest law. A man who by arrangement pays for produce by instalments, and, having obtained his produce, fails to pay some instalment, has not extracted forest produce illicitly.

34. **British Burma.**

Circle.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 66 of the Forest Act.	Total.	
Pegu	115	61	176	87
Tenasserim	79	3	82	75
Total in 1884-85	194	64	258	82
„ 1883-84	193	57	250	87
Increase or decrease in 1884-85 ...	1	7	8	—5

The number of offences remains very low. The percentage of convictions in the Tenasserim Circle has fallen from 86 in 1883-84 to 75 in 1884-85.

35. **Assam.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
1884-85	55	34	89	69
1883-84	86	45	131	65
Increase or decrease in 1884-85 ...	—31	—11	—42	4

Forest offences are still very few, and there has been a considerable decrease since last year. This is attributed to the fact that the intentions of Government, as expressed in the local rules, are being better understood, and that the people have within the District Forests the free use of all forest produce, except reserved timber.

Coorg.

36. The number of cases taken into Court was 8, and in all of them convictions were obtained.

37. **Ajmere.**

Year.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded.	Total.	
1884-85	47	48	95	90
1883-84	31	36	67	90
Increase in 1884-85	16	12	28	...

The high percentage of convictions has been maintained; but, owing to the partial failure of the rains, and the consequent scarcity of fodder, the impounding of cattle for trespass increased.

38. **Berar.**

Year.	Number of Cases taken into Court.	Percentage of Convictions to total number of Cases decided by the Courts.
1884-85	308	84
1883-84	381	83
Increase or decrease in 1884-85	—73	1

The percentage of convictions is good, while the total number of cases is small, and protection was efficient.

39. **Madras.**

Circle.	Prosecutions.		Acquittals.
	1883-84.	1884-85.	1884-85.
Northern	606	845	165
Southern	588	1,031	310
Total ...	1,194	1,876	475

Compounded cases have been classed as acquittals, so that it is not possible to examine into the working of section 55 of the Madras Forest Act.

40. **Bombay.**

Circle.	Number of Cases.			Percentage of Convictions to total number of Cases decided by the Courts.
	Taken into Court.	Compounded under Section 67 of the Forest Act.	Total.	
Northern	796	2,310	3,106	77
Southern	147	359	506	76
Sind	98	839	937	69
Total in 1884-85	1,041	3,508	4,549	76
„ 1883-84	1,150	1,748	2,898	75
Increase or decrease in 188485 ...	—109	1,760	1,651	1

Except in the Tanna District, protection has been efficient, and Forest Officers have everywhere exercised their powers under Section 67 of the Forest Act with freedom and judgment.

II.—PROTECTION FROM FIRE.

General.

41. Tables were compiled during the year, giving the history of the fire-protection of each block of forest, as shown by the yearly extent of area attempted, burnt, and protected, with the percentage of failure and the cost per acre. These were circulated to all Conservators, who were asked to examine and report on the correctness of the tables. But, as the work of correcting the figures and making them agree with previous Reports in communication with the local Conservators is not yet finished, it is to be regretted that the abstract of the tables can only be exhibited (Appendix A) in a form still open to corrections and modifications, which, it is hoped, however, will be made before the next Review appears.

In the tables at present appended, it has been assumed that all benefits derived from previous fire-protection are lost by the occurrence of a single conflagration, and areas thus burnt have been entirely omitted. Without special knowledge of each forest, no other system was feasible; but as the figures now stand, they represent the worst possibility of the case, which in reality wears a much more favourable aspect. It is the general opinion of those Officers who have written about the question that the present estimates of the benefits conferred by previous fire-protection have been greatly undervalued; and the Officiating Inspector General of Forests has been able to verify, from numerous inspections of forests in the Central Provinces and Oudh which were burnt through after a continuous protection for a number of years, that the benefits derived from previous protection were by no means eradicated by the occurrence of a single fire. In many instances, it required accurate inspection to recognize the traces of such fire, which had occurred more than a year previously. In future years the tables should accordingly be modified, but only on the strength of actual inspections. It is also desirable that the fire-protected areas, which as yet are still shown in large blocks, should, whenever possible, be broken up into compartments in order to enable the Conservators to locate fires, which at present is extremely difficult, especially when some time has elapsed after their occurrence. The Officiating Inspector General of Forests prepared a table of this sort for the Kheri Forests, which is appended (Appendix B), and which might serve as a model for a record to be kept by every Divisional Officer.

42. The following table exhibits the areas under fire-protection and the results of the year's operations :—

Province.	Area, in square miles.		Percentage of Failures to Area Attempted.	Cost.		Year when Fire Conservancy commenced.	Proportion of area under Fire-protection to total area of Reserves, in per cent.
	Attempted.	Protected.		Per square mile protected.	Per acre protected.		
				Rs.	Pies.		
Bengal	1,259	980	22	16	5	1872	26
North-Western Provinces and Oudh.	1,156	1,150	·52	33	10	1869	34
Punjab	324	324	...	3	1	1871	23
Central Provinces ...	1,434	1,399	2	13	4	1864	7
British Burma ...	292	275	6	56	17	1857	8
Assam	210	199	5	52	16	1873	9
Coorg	194	176	9	18	5	1876	81
Ajmere	144	144	...	4	1	1874	100
Total ...	5,013	4,647	7	22	7	...	14
Berar	1,046	1,023	2	5	2	1870	68
Total Bengal Presidency	6,059	5,670	6	19	6	..	16
Madras	1,465	1,427	3	16	5	1867	45
Bombay	8,547	7,983	7	½	...	1874	92
Grand Total ...	16,071	15,080	6	9	3	...	32

The above table shows that 16 per cent. of the reserved areas in the Bengal Presidency, and 45 per cent. of those in Madras, were specially fire-protected. This does not, however, embrace the whole area that was not burnt during the year, as (especially in Bengal and the north of India) considerable areas are, as a rule, free from fires, though not specially protected.

43. The time has happily passed when a serious discussion could be raised as to whether the occurrence of forest fires did not perhaps benefit the country at large, and even the forest growth itself; and it is now almost universally recognized that such fires are an unmitigated evil, and that the barren condition of so many hill-sides in India is almost entirely due to their annual occurrence. The careful experiments and detailed inquiries which are at present being carried out in the School Circle, regarding the influence of the fire-protection of drainage areas on the regulation of streams debouching from the Siwaliks and on the prevention of sudden floods, begin to yield most valuable data. The streams have already contracted and assumed more regular and better defined courses, and the duration of the highest flood at a lower average level has materially increased. It requires only a few more years' experience to show that this was not due to other causes—such as exceptionally prolonged and steady rains—to enable us to make the most unquestionable deductions and to prove the physical possibility of preventing, or at least largely reducing, disasters caused by sudden floods. There can also be no doubt that a general suppression of the firing of the waste uncultivated areas in this country would have a most beneficial influence on the climate, for there is good reason to believe that the stopping of *kumri* and *dahya* cultivation in the Central Provinces, which at one time laid bare thousands of square miles, has somewhat augmented the rainfall of that country. A general fire-protection would have probably even more marked results, but many prejudices must be overcome before this can be effected, and considerable changes must take place in the customs of the people before the annual burning of the grazing areas is abandoned or can be prohibited. There is really no necessity for firing grass lands; for where grass is valuable—as, for instance, in the vicinity of Simla and near the Kalka-Simla road—the grazing areas are not burnt, and no deterioration of the grass crop can be observed.

44. The enormous progress that has been made in the fire-protection of Government Reserves, at the cost of hard work, anxiety, and exposure on the part of Officers of every grade, can hardly be sufficiently appreciated from the mere study of the tables appended. The work is highly creditable to the Forest Department. Nevertheless, new areas should be added year by year, till every acre of Government forest and waste lands is fire-protected. Experience already proves that trouble and money expended will be amply repaid by the final results.

The ultimate prohibition of the firing of private forests and waste lands, which is still the order of the day throughout the length and breadth of the country, should never be lost sight of, though it may be still impracticable to enforce such prohibition at the present time.

45. **Bengal.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	1,259	279	980	22	16
1883-84	828	60	768	7	21
Increase or decrease in 1884-85 ...	431	219	212	15	—5

The area attempted is again largely in excess of the previous year; and although the percentage of failures was above last year's figure, the forests

which had been protected for a longer period were mostly preserved, the failures being in the newly attempted areas.

The new table showing the areas of Reserved Forests that escaped being burnt, whether with or without special measures, is very interesting. It shows that out of 4,882 square miles of Reserved Forests, 1,747 square miles are liable to annual conflagrations, and 3,135 escaped fire without special protection.

46. **North-Western Provinces and Oudh.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Central	402	1	401	0·25	40
Oudh	397	4	393	1·01	30
School	357	1	356	0·28	29
Total in 1884-85 ...	1,156	6	1,150	0·52	33
„ 1883-84 ...	959	85	874	8·65	43
Increase or decrease in 1884-85 ...	197	—79	276	—8·13	—10

The results of fire-protection, as shown by the above table, have been most satisfactory, and they are the most favourable on record. It is not to be expected that this high degree of success can be maintained, for the season was a most favourable one. The area attempted has risen from 28 to 34 per cent. of the total area of Reserved Forests in the North-Western Provinces and Oudh. The balance, however, still contains many valuable forests, the protection of which is essential.

47. **Punjab.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	324	...	324	...	3
1883-84	76	6	70	8	8
Increase or decrease in 1884-85 ...	248	—6	254	—8	—5

The Government Forests in the Punjab are but little liable to burn, and, with few exceptions, no special measures to protect them from fire are taken or required. Hence the total expenses only amounted to Rs. 1,065 during the whole year.

In the Hazara District, where the villagers were getting into the habit of firing the Government Forests, the strong measure was had recourse to of closing against grazing and suspending the rights in the areas burnt—an action which is highly commendable and deserves imitation.

48. **Central Provinces.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs. A. P.
1884-85	1,434	35	1,399	2	13 4 0
1883-84	1,429	63	1,366	4	12 8 8
Increase or decrease in 1884-85 ...	5	—28	33	—2	0 11 4

The area attempted is now 41 per cent. of the total area of 1st class Reserves, but only 7 per cent. of the total 19,440 square miles of Reserved Forests in the province.

Although the Central Provinces head the list in the matter of fire-protection, in the magnitude of the operations, the success of the undertaking on the whole, and the cheapness with which this success is attained, still it is believed that much more might be done in the vast areas at the disposal of Government in the 2nd class Reserves.

The operations of the year have been most successful, for, of the area burnt in the year under review, all but one square mile was in forests peculiarly liable to be fired by dakaits.

49. **British Burma.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Pegu	165	5	160	3	65
Tenasserim	127	12	115	9	43
Total in 1884-85 ...	292	17	275	6	56
„ 1883-84 ...	286	25	261	9	54
Increase or decrease in 1884-85 ...	6	— 8	14	—3	2

The area attempted has again increased, and the success obtained has also increased. But still only 8 per cent. of the Reserved Forests, excluding *taungya* areas, are fire-protected, and the cost per square mile is the largest in any province. Experience shows that the cost per acre will decrease as larger areas are taken in hand. There is a very great deal still to be done in restricting the universal firing of the forests which obtains in Burma. This province contains large areas which are not exposed to annual conflagrations.

50. **Assam.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	210	11	199	5	52
1883-84	209	61	148	29	64
Increase or decrease in 1884-85 ...	1	—50	51	—24	—12

A very great improvement has taken place in fire-protection in Assam, the percentage of failures having fallen from 29 to 5 per cent., and the cost from Rs. 64 to 52 per square mile protected. But the cost is still very high, and will continue to be so until larger areas are fire-protected, and until the vast areas of savannah land outside the Forest Reserves have been brought under cultivation, or become otherwise less liable to burn.

In all, 1,640 square miles are reported to be not liable, as a rule, to burn, and probably continuous immunity from fire will ultimately be secured for this area.

51. **Coorg.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	194	18	176	9	18
1883-84	193	15	178	8	11
Increase or decrease in 1884-85 ...	1	3	—2	1	7

The result of fire-protection has not been so successful as in the previous year, though the cost has risen considerably.

It is satisfactory, however, to learn that the Western Ghât Forests, comprising 349 square miles, are not liable to annual conflagrations.

52. **Ajmere.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Acres.	Sq. miles.		Rs. A. P.
1884-85	144	47	144	0·051	4 4 7
1883-84	139	5	139	0·006	3 15 8
Increase or decrease in 1884-85 ...	5	42	5	0·045	0 4 11

Of the 144 square miles attempted, 17½ square miles do not require any special measures.

53. **Berar.**

Year.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
1884-85	1,046	23	1,023	2	5
1883-84	1,048	76	972	7	7
Increase or decrease in 1884-85 ...	—2	—53	51	—5	—2

Fire-protection has been more successful, as well as cheaper, than last year. In cheapness of fire-work, Berar is first among all provinces, and it contains the largest compact blocks under fire-protection in the whole of India, in the Bairagarh Reserve of 403 square miles and the Gugumal Reserve of 180 square miles.

54. **Madras.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Rs.
Northern	720	24	696	3	15·5
Southern	745	14	731	2	15·6
Total in 1884-85 ...	1,465	38	1,427	3	15·5
„ 1883-84 ...	901	36	865	4	10·5
Increase or decrease in 1884-85 ...	564	2	562	—1	5·0

The area attempted shows a large increase, while the cost has also risen; but the success has been very good. As yet only 16 per cent. of the forests at the disposal of Government are fire-protected; but this proportion, too, is rapidly increasing.

55. **Bombay.**

Circle.	Area Attempted.	Failures.	Area Protected.	Percentage of Failures to Area Attempted.	Cost per square mile Protected.
	Sq. miles.	Sq. miles.	Sq. miles.		Annas.
Northern	4,852	205	4,647	4	2
Southern	3,059	356	2,703	12	10
Sind	636	3	633	0·47	3
Total in 1884-85 ...	8,547	564	7,983	7	5
„ 1883-84 ...	12,059	2,130	9,929	18	5
Increase or decrease in 1884-85 ...	—3,512	—1,566	1,946	—11	...

The area attempted is 61 per cent. of all the Forests, Reserved and Protected, while the very small cost per square mile seems to point to the fact that extensive areas are included in the fire-protection table which are not usually liable to burn.

III.—REPRODUCTION OF THE FORESTS.

General.

56. With every new year it becomes a matter of greater certainty that over a large extent of the country, when the conditions of climate and soil are favourable, protection alone suffices to ensure reproduction; and even areas which have been ruined by former ill-treatment, recover in many parts of the Empire with a rapidity unknown in countries with a less rapid decomposition of soils and a more sluggish vegetation. There are doubtless many localities, in which progress is not appreciable during a term of a few years. In some cases such areas are formed by savannahs, where, under the influence of a strong monsoon, grass, sometimes reaching a height of 15 feet and more, seems to render the establishment of arbori-vegetation an impossibility; but even in such localities *Bombax malabaricum*, *Butea frondosa*, *Albizzia procera*, *Acacia arabica*, *Dalbergia Sissoo*, and others, varying according to geographical situation, take advantage of openings in these seas of grass, and show above the surface after comparatively few years. In other places it is a hard, barren surface-soil, which for a time seems to resist every effort of nature; and sometimes it is a dense cover of felty grass. In many localities the decomposed surface-soil has entirely disappeared, and this represents the worst feature, especially where the exposed rocks and stones are hard and the rainfall is scanty.

The reports received regarding natural reproduction in protected areas are generally encouraging, and are entirely borne out by observations made by the Officiating Inspector General of Forests during his winter tours. Records of the existing state of natural reproduction are kept with considerable care by many Divisional Forest Officers. Such records will serve for comparison with future results, and are not only interesting and instructive, but are also necessary, for without such records the benefits derived from protection cannot be gauged, and are frequently underrated.

The areas with which the Forest Department has to deal in India are so out of proportion to the income derived and the strength of the Department in all its branches, that artificial cultivation is of necessity reduced to localities where no success can by any possibility be obtained by protection only, or where the state of the market permits it on financial considerations.

57. The area of cultural operations is exhibited in the following table:—

Province.	Area, in acres.			
	At the commencement of the year.	Added during the year.	Excluded during the year.	At the close of the year.
Bengal	2,568	367	...	2,935
North-Western Provinces and Oudh	3,718	490	...	4,208
Punjab	17,940	368	...	18,308
Central Provinces	...	...	...	...
British Burma	13,415	1,748	...	15,163
Assam	1,296	165	...	1,461
Coorg	830	157	...	987
Ajmere	355	46	...	401
Baluchistan	51	6	...	57
Total ...	40,173	3,347	...	43,520
Berar	2,660	879	...	3,539
Total Bengal Presidency ...	42,833	4,226	...	47,059
Madras	40,850	11,735	...	52,585
Bombay	75,268	...	5,134	70,134
Grand Total ...	158,951	10,827	...	169,778

Bengal.

58. Much interest is taken in the subject of natural reproduction, and the effects of fire-protection and restricted grazing are carefully noted by all Forest Officers. The results are reported as favourable throughout. In the Buxa *sdl* forest, in the Buxa Division, natural reproduction has been greatly assisted by dragging light logs through the forests, which crushed the grass and wounded the soil.

The record of artificial reproduction stands as follows :—

	At the commencement of the year.	Added.	Excluded.	At the close of the year.
	Acres.	Acres.	Acres.	Acres.
Regular plantations	1,700	301	...	2,001
Other cultural operations ...	868	111	45	934
Total in 1884-85 ...	2,568	367	...	2,935
„ 1883-84 ...	2,439	129	...	2,568

This gives an increase of 301 acres of regular plantations and of 66 acres of other cultural operations. Creeper cutting is considered very important; it extended during the year under review over 17,446 acres, and continuous extension is promised.

North-Western Provinces and Oudh.

59. The effect of protection on natural reproduction has been generally noted as very favourable. The protected portion of the Motipur Forest in Bahraich, which was never burnt since its protection was first attempted, is densely stocked, and observations made in Kheri show that a protection extending over five successive years will, where the forest is sufficiently open in these localities, ensure a very fair reproduction. The reproduction of *sál* under *asseina* is remarkable; this is due to the high canopy of the latter, and to the fact that *asseina* is out of leaf when the *sál* seeds. In the hill forests the natural reproduction of deodar is said to be very promising.

The area artificially cultivated has been increased from 3,717 to 4,208 acres.

Punjab.

60. The subject of the reproduction of Deodar, both natural and artificial, in the Punjab hills has occupied much attention; and it seems to be allowed that although natural reproduction can be and, with the assistance of fire-protection, is to be mainly depended on for the restocking of these forests, nevertheless, artificial planting may be and often is necessary on grass slopes without parent trees, or when it is desirable to establish the tree in Oak and *Pinus excelsa* forests, or when thickets of *Indigofera* or *Parrottia* prevent the springing up of a natural crop.

The following abstract records the state of cultural operations :—

	At the commencement of the year.	Added.	Excluded.	At the close of the year.
	Acres.	Acres.	Acres.	Acres.
Regular plantations	15,367	86	...	15,453
Cultural operations	2,573	370	88	2,855
Total ...	17,940	368	...	18,308

The decrease in the area is due to credit having been erroneously taken in previous returns for certain areas.

Central Provinces.

61. The progress of natural reproduction in areas under protection from fire has been favourably reported on, and the preponderance which Teak assumes in the young growth over vast areas of forests promises well for their future value. The dibbling operations, which were some years ago carried out in several parts of the country, begin to have effect by the appearance of seedlings above the grass.

British Burma.

62. The areas treated by sowing and planting operations increased during the year by 1,748 acres, of which 1,690 were in the form of Teak-*taungya* plantations. Only 58 acres were added to the regular plantations. No other cultural operations were undertaken during the year by reason of there being no flowering of the bamboos, on which the possibility of such works depends to a great extent.

The state of artificial reproduction is now represented as follows :—

Circle.	Regular Plantations.	Taungya Plantations.	Cultural Operations.	Total.
	Acres.	Acres.	Acres.	Acres.
Pegu	3,670	6,333	3,213	13,216
Tenasserim	23	1,816	108	1,947
TOTAL ...	3,693	8,149	3,321	15,163

Assam.

63. Natural reproduction in a climate like that of Assam is of course most luxuriant, and nothing but protection is required to assist it.

Artificial cultivation is consequently for the present confined mainly to the rubber tree; 145 acres of plantation were added, bringing up the total to 1,168 acres, which have cost Rs. 73½ each.

Coorg.

64. The area of the teak plantations was increased by 134 acres, and of the sandalwood by 23 acres. There are now 949 acres under artificial plantation, of which 563 are teak, 301 sandal, and 85 fuel. There is no information about the state of natural reproduction in fire-protected areas as compared with those that burn annually.

Ajmere.

65. The benefits of fire-protection have been acknowledged on all sides. An opportunity occurred of giving most tangible proof of this. The grass crop had failed owing to the partial failure of the rains, and the Reserves were thereupon thrown open to grazing, thus affording immense relief to the cattle of the District. The Reserves yielded also an immense amount of fodder grass, which was cut and removed. Young tree growth begins to top the grass in every direction.

Berar.

66. Nothing was attempted in the way of regular plantations.

In south Berar natural regeneration is reported to be good in forests that have been protected from fire for six years. It is stated by the Conservator that the exclusion of cattle, as well as of fire, produced such a heavy crop of grass as to interfere with arbori-reproduction, and cattle were again admitted under restrictions. This is, in the opinion of the Officiating Inspector General of Forests, a great mistake. Cattle should certainly not have been admitted as long as they can tread seedlings under foot. In the Bairagarh Reserve, protected for 17 years, the natural reproduction is remarkable.

Madras.

67. The opinion is universal that fire-protection and the exclusion of cattle have had most beneficial results on the natural reproduction of the forests.

Owing to further corrections of area, the regular plantations are shown as consisting of 18,947 acres, against 35,097 in 1883-84.

Bombay.

68. Natural reproduction is reported as having noticeably improved in the closed forests (Northern Circle), and as having been materially assisted by fire-protection and closing (Southern Circle). Reproduction has quite changed the features of the southern portion of Bijapur since conservancy began; while in Sind, large areas, hitherto closed, were opened to grazing, the new growth having attained sufficient height to be thought safe from harm.

Reproduction, both of grass and trees, on the previously barren, but now protected, hill-sides in the Poona District is as remarkable a result of forest protection as can be found.

Throughout the Northern Circle reproduction was extensively assisted by broad-cast sowings, dibbling, and even planting, which were to a great extent carried on by the protective establishment in addition to their other duties. The favourable results of the former operations warrant their being continued. It is a pleasing contrast to see a Forest Reserve densely covered with young vegetation side by side with a barren hill-side furrowed by rain and unable to produce a decent grass crop.

IV.—COMMUNICATIONS AND BUILDINGS.

69. The outlay under this head during the year is as follows :—

Province.	Roads and Bridges.	Buildings.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.
Bengal	12,588	24,493	199	37,280
North-Western Provinces and Oudh ...	29,268	9,908	1,136	40,312
	20,370	17,146	3,378	40,894
	10,943	8,713	1,130	20,786
	60,581	35,767	5,644	1,01,992
Punjab	4,272	6,508	29	10,809
Central Provinces	2,934	1,845	1,103	5,882
British Burma	2,278	6,360	5,120	13,758
	...	3,573	...	5,573
	2,278	9,933	5,120	17,331
Assam	12,953	10,873	241	24,067
Coorg	760	952	...	1,712
Ajmere	114	215	643	972
Baluchistan	...	192	...	192
Forest Surveys (Imperial) ...	...	...	...	...
Forest School	...	...	...	...
Total ...	96,480	90,778	12,979	2,00,237
Berar	15,461	597	187	16,245
Forests Surveys (Berar)	...	398	...	398
Total Bengal Presidency ...	1,11,941	91,773	13,166	2,16,880
Madras	6,050	11,232	...	17,282
	12,717	17,213	543	30,473
	18,767	28,445	543	47,755
Bombay	1,066	2,279	605	3,950
	2,005	6,041	477	8,523
	2	760	...	762
	3,073	9,080	1,082	13,235
GRAND TOTAL ...	1,33,781	1,29,298	14,791	2,77,870

70. The totals for the Bengal Presidency compare as follows with those of the five previous years :—

	Rs.
1879-80	1,66,193
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066
1883-84	1,84,998
1884-85	2,16,880
Average per annum ...	1,82,248

71. Under *Roads and Bridges*, there were in—

BENGAL.

	Miles.	Cost. Rs.
New roads constructed	105	...
Old roads maintained	320	...
Total ...	425	12,588

The Chota Nagpore Division, which much required opening out, received special attention.

NORTH-WESTERN PROVINCES AND OUDH.

	Miles.	Cost. Rs.
Central Circle—		
New roads	31	6,449
Old „	588	22,819
Total ...	619	29,268

The total mileage of roads in this Circle under the Forest Department now amounts to 1,574 miles.

	Miles.	Cost. Rs.
Oudh Circle—		
New roads	103	...
Old „	878	...
Total ...	981	20,370

The new roads were mostly in Pilibhit, Bahraich, and Bhira.

	Miles.	Cost. Rs.
School Circle—		
New roads	22½	3,076
Old „	691½	6,919
Sledge „	...	366
Total ...	714	10,361
Bridges repaired ...	...	582
Total ...		10,943

Similarly detailed information is not available from the other provinces, the expenditure in which was, moreover, quite normal. In Assam the principal work was the construction of the Dambu cart-road, which will open communication with one of the richest portions of the Garo Hills.

During the last eight years, *i.e.*, from 1877-78 to 1884-85, the gross outlay on roads and bridges in the Bengal Presidency has been Rs. 6,18,000, or about $2\frac{1}{4}$ per cent. of the gross charges of the Department under all heads.

72. *Rest-houses.*—In Bengal the total outlay of Rs. 24,493 under Buildings is thus accounted for—

	Rs.
Purchase and repair of head-quarter bungalows ...	8,337
Construction of rest-houses, range-houses, and other buildings in the forests.	10,998
Repairs	5,158
Total ...	24,493

In the North-Western Provinces and Oudh:—

Central Circle.—The outlay is thus classified—

	Rs.
Officers' rest-houses	3,790
Permanent chaukis and subordinates' houses	3,646
Temporary ,, ...	101
Repairs	2,371
Total ...	9,908

Oudh Circle.—The large sum of Rs. 17,146 was spent mostly on four new rest-houses, which, however, were not completed during the year.

School Circle.—The expenditure was as follows:—

	Rs.
Officers' rest-houses	2,887
Subordinates' houses	1,409
Chaukis, &c.	1,521
Repairs	2,896
Total ...	8,713

In the Punjab the expenditure of Rs. 6,508 was mostly on maintenance and improvement of existing buildings, the Bashahr Division requiring Rs. 2,308, or more than one-third of the whole.

In the Central Provinces the expenditure was infinitesimal, considering the magnitude of the forest area and revenue.

So also in British Burma, the Pegu Circle spending less than one per cent. of its expenditure during the year on buildings, and the Tenasserim Circle only $1\frac{1}{2}$ per cent., while Assam spent 11·5 per cent.

In the Bengal Presidency the expenditure on buildings since the year 1877-78 has been about $2\frac{1}{4}$ per cent. of the gross expenditure, or Rs. 6,19,576.

V.—SUMMARY OF DEMARCATION AND IMPROVEMENT OF FORESTS.

73. The expenditure under these heads during the year is as follows:—

Province.	Demarcation.	Compensation for land and rights.	Surveys and working-plans.	Plantations.	Protection from fire.	Other works.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	10,309	40	1,722	10,500	15,901	1,280	39,752
	1,032	...	2,692	3,557	16,916	1,712	25,909
North-Western Provinces and Oudh.	4,303	21	...	6,164	11,197	9,138	30,823
	2,061	750	2,465	4,139	10,232	2,534	22,181
	7,396	771	5,157	13,860	38,345	13,384	78,913
Punjab	8,396	5,241	1,962	49,144	926	2,011	67,680
Central Provinces	10,480	60,010	1,538	406	17,585	3,730	93,779
	4,284	277	8,081	29,075	11,342	424	53,483
British Burma	357	60	73	3,784	4,377	83	7,434
	4,641	337	8,154	32,859	15,719	507	62,217
Assam	8,492	525	7,803	8,371	9,930	7,963	43,084
Coorg	1,137	....	1,895	16,773	3,185	38	23,028
Ajmere	54	...	...	1,404	604	1,059	3,121
Baluchistan	3	...	...	320	...	91	414
Forest Surveys (Imperial) ...	...	...	2,110	...	...	...	2,110
Forest School	...	...	...	...	...	...	...
Total ...	50,908	66,954	30,341	1,33,637	1,02,195	30,063	4,14,098
Berar	674	1,059	...	1,788	4,697	381	8,599
Forest Surveys (Berar) ...	...	...	5,018	...	...	...	5,018
Total Bengal Presidency ...	51,582	68,013	35,359	1,35,425	1,06,892	30,444	4,27,715
	11,971	2,306	36	29,726	9,653	1,715	55,407
Madras	11,092	9,050	1,249	40,697	9,292	20,591	91,971
	23,063	11,356	1,285	70,423	18,945	22,306	1,47,378
	1,694	39,984	4,430	6,850	973	1,72,752	2,26,683
	2,235	123	4,643	7,199	2,269	27,727	44,196
Bombay ...	2,174	69	6,314	4,367	299	10,148	23,371
	6,103	40,176	15,387	18,416	3,541	2,10,627	2,94,250
GRAND TOTAL ...	80,748	1,19,545	52,031	2,24,264	1,29,378	2,63,377	8,69,343

74. The following table shows the expenditure on demarcation and improvement of forests in the Bengal Presidency for the last six years:—

	Rs.
1879-80	2,55,647
1880-81	2,66,925
1881-82	3,22,449
1882-83	3,27,704
1883-84	3,53,629
1884-85	4,27,715
Average per annum ...	3,25,678

CHAPTER IV.

Working and Yield.

EXPLOITATION.

75. The exploitation of the various products of the forests is carried on in the Indian Government Forests in a great variety of ways, necessitated by the various customs and requirements of the very many localities in which the Indian forests are found. But it may be divided into two main heads—direct or departmental work, and indirect working by means of purchasers and consumers: this is the division adopted in Forest accounts and returns.

76. Departmental working always means that the material to be exported is selected and marked by professional men, and that the extraction of the material is supervised by the officials of the Forest Department. Sometimes it is necessary for the officials to raise the labour gangs for felling the material, and to pay them by the day, by the job, by the tree, &c. The trees have to be logged *in situ*, and even cut up, sawn, or fashioned more or less. In the case of fuel and small material, the produce may have to be classified and stacked on the *coupe*, or it may have to be carried to the nearest public road or forest depôt. Sometimes temporary paths and roads have to be made to permit of the extraction of the material. Some portions of the work may be done by daily payment, some by contract; but the material always remains the property of Government, until it reaches the place where it is sold. Government bears the whole cost of extraction, and takes the whole amount of the realization.

In the Deodar forests of the North-Western Himalaya, the departmental work is the most detailed on account of the generally difficult nature of the ground. Here the log has frequently to be sawn up on the spot into the form for which the demand exists—usually sleepers, beams, planks, &c. This material has then to be carried to the head of the tramway, or slide, or shoot, or cart-road, as the case may be. Part of this may be done by coolies, partly by dragging by means of cattle. Job work is resorted to whenever possible, the labourers being paid by the piece, by the score or hundred, or by the cubic foot.

Sometimes heavy works, such as tramways, slides, shoots, roads, bridges,* have to be undertaken; stores have to be established to feed large gangs of labourers, and food may also have to be bought by Government and issued to labourers at fixed rates, during the months that the roads are impassable to private enterprise on account of swollen rivers, snow, &c. In this kind of work there is every variety and every degree of detail.

In Burma, as the material to be exported is generally in the form of girdled trees, the whole business of felling, logging, rafting, floating, and carriage to final destination is given out on contract, the Forest officials simply seeing that the contractors obey the conditions of the contract. But the principle is the same—*viz.*, that the material remains the property of Government, that Government bears all the cost of extraction, and takes the whole of the money realized by the sale.

In the hill-stations of Darjeeling, Naini Tal, Ranikhet, and Chakrata, the material is mostly fuel, more rarely building timber. The forests here are not very extensive, and all that can safely be removed has to be carefully selected by the Forest Officers, and the felling and cutting are carried on under very close supervision. Government generally undertakes the carriage to depôts, as most of the consumption is by other Government Departments. But here, too, the material remains the property of the Forest Department, until handed over to other officials or sold to dealers.

* As the Bakani slide and the Changa Manga tramway in the Punjab; the sledge-way at Deota, and the Mandhal and Lambatach slides in the North-Western Provinces.

Similarly, fuel forests in the plains are frequently worked departmentally for the supply of railways; collieries are supplied with pit props, and depôts are opened in centres of consumption, to which are departmentally carried various kinds of forest produce in order to create a demand and open up a trade with some forest hitherto inaccessible; for this purpose roads have probably to be made, as in the Dambu Forest in Assam, the Melghat in Berar, and many other forests.

On account of all these expenses of carriage, of the distance of the big timber forests from the markets, and the consequent high price of labour, departmental operations do not always show so favourably, financially considered, as the indirect sytsem of working.

77. From this purely departmental system, we pass naturally to that under which the Forest Department selects the material to be removed, and sells it standing; the cutting and extraction are in this case done by and at the cost of the purchaser. This we have at present only in a few places in India, notably in the Dehra Dún. It is only applicable where the demand reaches the full potential capability of a forest; where the entire yield of a forest, both main and accessory, has a local market value; where there is a sale not only for the timber in the tree, but also for the residue of the working, the branch wood, and often also the leaves, fruit, and bark, and the grass which grows beneath it.

78. The third or indirect method of forest exploitation, and the one commonest over the majority of the areas under the management of the Forest Department, is that whereby the produce is sold and made over to the purchaser on foot, he having the selection of the individual tree to be felled, or of the produce to be removed. All the various methods or combinations of methods of indirect working may be grouped under—

The Permit or License system,
The Kham Tahsil system,
The Commutation system.

79. Under the Permit System, an endeavour is made—by defining in the permit the kind of produce, whether green or dry, timber, fuel, bamboos or grass, tree, pole or sapling, &c., and the locality within and from which it is removable—to secure some kind of sylvicultural method of working to the forest. The permit also either secures prepayment of the produce to be exported, or arranges how and when it shall be paid for; and it often prescribes by what road, by what means, and within what delay the produce may be removed. According to the forest, the demands made upon it, its accessibility, its difficulty of protection, &c., so the permit in various localities varies in what it aims at securing. But the underlying principle is that payment is provided for, and that the selection of the individual form of produce lies with the purchaser.

80. The next, or Kham Tahsil System, does not even aim at so much; it can only apply to unclosed forests, or at any rate to the unclosed portions of large blocks of forests. The forest is open to all ingress; but no one can leave the forest, having forest produce in his possession, without payment according to a fixed tariff, which is perfectly well known in the locality. Here, except by reserving separate species by name, or green wood as against dry, or by closing and notifying as closed particular spots, there is no let or hindrance on the woodman, either in quality or quantity of material. The man who wishes for a particular size, or shape, or kind of wood for a special purpose, such as the mortar of an oil-mill or the axle of a cart, may cut down twenty trees before he is suited, and no one prevents him. Nor (supposing there is no local rule against it) will any one prevent him cutting down half an acre of forest *à blanc étoc* for fuel if he so wishes it. The system is a revenue one, not a sylvicultural one. Nevertheless, it sometimes finds advantageous application in India, notably in the Garhwal and Kumaun forests of the North-West Himalayas. On the part of the Forest Department, it is a mere matter of police. The forest is surrounded by a cordon of revenue and check chaukis. If the exporter can run the gauntlet of these, so much the worse for the Forest police. No one concerns himself with what goes on in the interior of the forest.

So much for the system: practically it is not so bad as it looks, for there always *are* local rules and restrictions; Forest officials *do* patrol the interior on fire-work, on road-making, on planting, and on looking after reserved kinds, &c.; and along the boundary of forests administered under the Kham Tahsil System there usually springs up a population of woodmen, who make their main livelihood from the forests. They have a little cultivation perhaps beyond the forest boundary, but they are the men who know the interior, and where the best bamboos and poles, or the finest timber, the best thatching grass, the most mohwa or chironji are to be found. They are those who are employed by the timber merchant of the plains, who is *not* a woodman, and who comes up with money in his hand, squats in a hut close to the forest chauki, gets a portion of the depôt allotted to him, advances money to the woodmen, and pays for the produce as it comes out, and when measured and assessed by the Forest Mohurrir. The advantages of the Kham Tahsil System are, however, more than counterbalanced by its disadvantages; and it has only temporary justification in such places in India where the capabilities of the forest are largely in excess of the demand.

81. The Commutation System finds application mainly in the Central Provinces, where enormous tracts of country are under forest, and where the population is excessively sparse and poor. Under it the population pay for all their simple requirements on an assessment made per house or plough, or on their income, or on the land revenue they pay. Nothing could be simpler or more elementary than this.

YIELD.

Bengal.

82. The yield of the different descriptions of forests was as follows:—

	Timber.	Fuel.	Bamboos.	Minor produce.
	Cubic feet.		No.	Maunds.
Reserved Forests.				
By Government Agency ...	78,147	328,213	581,933	427
„ Permit-holders	5,067,051	11,035,383	4,862,388	3,120,915
Free grants	3,626	.....	.....	975
Total ...	5,148,824	11,363,596	5,444,321	3,122,317
Protected and District Forests.				
Free grants	.....	.....	900	.....
By Permit-holders	505,657	4,985,812	16,264,905	806,553
Grand Total in 1884-85 ...	5,654,481	16,349,408	21,710,126	3,928,870
„ „ „ 1883-84 ...	6,466,746	19,034,256	20,572,889	4,990,257
Increase or decrease in 1884-85 ...	—812,265	—2,684,848	1,137,237	—1,061,387

With regard to Reserved Forests only, the following table compares the outturn of 1884-85 and 1883-84 :—

Year.	Timber.	Fuel.	Bamboos.	Minor produce.	Outturn, in cubic feet, of Wood per square mile of Forests.
	Cubic feet.		No.	Maunds.	
1884-85	5,148,824	11,363,596	5,444,321	3,122,317	3,382
1883-84	5,756,023	13,558,769	4,657,330	3,289,960	4,167
Increase or decrease in 1884-85 ...	—607,199	—2,195,173	786,991	—167,643	785

The decreased yield is mainly due to the conditions of the trade in the Sundarbans. Recent changes introduced into the Permit System caused discontent among the traders, who, having large stocks in hand, are still holding out against the changes and are not taking out permits.

North-Western Provinces and Oudh.

83. The following table shows the number of trees felled during the year, according to the class of fellings :—

Circle.	Selection fellings.	Thinnings.	Clearings.	Total.
Central	29,238	9,210	675	39,123
Oudh	12,357	169,122	2,215,554	2,397,033
School	14,099	21,112	1,735	36,946
Total in 1884-85 ...	55,694	199,444	2,217,964	2,473,102
„ 1883-84 ...	117,125	257,127	1,102,729	1,476,981
Increase in 1884-85 ...	...	...	1,115,235	996,121
Decrease in 1884-85 ...	61,431	57,683	...	...

The trees were felled by the following agency :—

Circle.	By Departmental Agency.	By Purchasers.	By Villagers (Free Grants).	Total.
Central	4,128	25,330	9,665	39,123
Oudh	182,052	719,213	1,495,768	2,397,033
School	14,030	16,928	5,988	36,946
Total in 1884-85 ...	200,210	761,471	1,511,421	2,473,102
„ 1883-84 ...	314,270	229,111	933,600	1,476,981
Increase in 1884-85 ...	...	532,360	577,821	996,121
Decrease in 1884-85 ...	114,060	...	...	...

According to species, the following trees were felled by departmental agency :—

Circle.	Sal.	Asna.	Sissu.	Deodar.	Other Conifers.	Oak.	Micellaneous.	Total.
Central	...	...	...	...	1,628	232	2,268	4,128
Oudh	18,637	2,288	1	...	...	...	161,126	182,052
School	9,688	...	...	929	759	2,246	408	14,030
Total ...	28,325	2,288	1	929	2,387	2,478	163,802	200,210

The fellings of the year yielded, according to the statements submitted, the following material :—

Circle.	Yield, in Cubic Feet.				
	By Departmental Agency.	By Purchasers.	By Villagers (Free Grants).	Total.	Per acre of Forest Area.
Central	75,385	285,572	111,638	472,595	·44
Oudh	768,621	1,719,219	1,396,250	3,884,090	5·01
School	282,035	817,209	466,030	1,565,274	3·20
Total in 1884-85 ...	1,126,041	2,822,000	1,973,918	5,921,959	2·53
„ 1883-84 ...	2,168,801	978,859	1,910,734	5,058,394	2·20
Increase in 1884-85 ...	...	1,843,141	63,184	863,565	·33
Decrease in 1884-85 ...	1,042,760	...	...	...	...

Selection fellings.

Circle.	By Government Agency.		By Contractors.		By Villagers.		Total.	
	No.	C. ft.	No.	C. ft.	No.	C. ft.	No.	C. ft
Central ...	3,437	72,863	16,136	274,319	9,665	111,638	29,238	458,820
Oudh ...	10,543	501,549	1,814	66,700	...	...	12,357	568,249
School ...	2,298	229,358	5,813	713,383	5,988	466,030	14,099	1,408,771
Total ...	16,278	803,770	23,763	1,054,402	15,653	577,668	55,694	2,435,840

Thinnings.

Central ...	16	35	9,194	11,253	...	...	9,210	11,288
Oudh ...	169,122	263,055	...	...	...	...	169,122	263,055
School ...	9,997	43,677	11,115	103,826	...	...	21,112	147,503
Total ...	179,135	306,767	20,309	115,079	...	...	199,444	421,846

Clearances.

Circle.	By Government Agency.		By Contractors.		By Villagers.		Total.	
	No.	C. ft.	No.	C. ft.	No.	C. ft.	No.	C. ft.
Central ...	675	2,487	...	...	...	...	675	2,487
Oudh ...	2,387	4,017	717,399	1,652,519	1,495,768	1,396,250	2,215,554	3,052,786
School ...	1,735	9,000	...	...	...	...	1,735	9,000
Total ...	4,797	15,504	717,399	1,652,519	1,495,768	1,396,250	2,217,964	3,064,273

Assuming that, in the returns for selection fellings, the trees felled by contractors and villagers have been selected by the Forest Department, the average yield of a tree in the Central Circle is 15 cubic feet, that of a tree in the Oudh Circle 46 cubic feet, and in the School Circle 100 cubic feet. And assuming that the trees felled by villagers were for themselves, then some 30 per cent. of the trees and 23 per cent. of the yield in cubic feet were given in free grants to villagers. As by "selection fellings" is understood the felling of "mature trees," it is obvious that mature trees vary very much in the three Circles; and in future some different classification may have to be adopted, for a mature tree of only 15 cubic feet of contents ought not to come in the same category with a mature tree yielding 100 cubic feet.

Of other produce cut and collected by Government agency, the following are the principal :—

Circle.	Firewood.	Charcoal.	Bamboos.
	Maunds.	Maunds.	No.
Central	87,989	1,298	689,797
Oudh	64,022	50	...
School	51,957	...	...
Total ...	203,968	1,348	689,797

Punjab.

84. The produce removed from the Government Forests and the Agencies by which removed are shown as follows :—

Description of Produce.	1883-84.	1884-85.				More.	Less.
		By Government Agency.	By Purchasers.	Free grants.	Total.		
Trees and poles cut, No. ...	67,088	4,617	25,787	82,755	113,159	46,071	...
Firewood, cubic feet stacked ...	7,616,238	2,111,460	6,742,641	...	8,854,101	1,237,863	...
„ maunds	71,962	1,185	...	...	1,185	...	70,777
„ pieces	94	1,769	...	...	1,769	1,675	...
„ loads	82,060	...	...	...	...	...	82,060
Charcoal, maunds	4,550	9,845	...	...	9,845	5,295	...
Bamboos, pieces	699,381	628,207	17,335	...	645,542	...	53,839
Coal, tons	317	...	...	...	...	...	317
Stone, cubic feet	21,350	...	25,450	...	25,450	4,100	...
Grass, maunds	4,608	...	2,945	...	2,945	...	1,663
„ loads	76,538	2	31,182	...	31,184	...	45,354

The falling off of the receipts in depôt is attributed to a bad floating year, but the value of local sales continues to improve.

The loss to the Government revenue on the forest produce given free to landholders and villagers is estimated at Rs. 62,000.

Central Provinces.

85. The number of trees felled by direct Government Agency was 19,432, as against 43,992 in the previous year. Of these, 729 in Mandla and 5,124 (poles for pit props) in Chanda were all that were cut for the direct object of producing revenue. The remainder were in the form of improvement cuttings, removal of hollow and injured trees, &c.

The total yield of the forests, as gathered and removed departmentally and by purchasers, is thus shown, the quantities being reduced to tons :—

Description of Produce.	By Departmental Agency.				By Purchasers.				Total.			
	Cubic feet.	Maunds.	No.	Reduced to Tons.	Cubic feet.	Maunds.	No.	Reduced to Tons.	Cubic feet.	Maunds.	No.	Reduced to Tons.
Teak and Sál wood	57,545	...	...	1,151	80,111	...	...	1,602	137,656	...	...	2,753
Other Woods	8,027	...	...	160·5	1,294,206	...	...	25,884	1,302,233	...	...	26,045
Firewood and Charcoal ...	...	21,165	...	756	...	19,53,214	...	69,758	...	1,974,379	...	70,513·5
Bamboos and articles made of Bamboos.	...	...	375,197	536	...	127,191	9,127,321	17,581·5	...	127,191	9,502,518	18,117·5
Grass, pulas	...	...	1,750,973	417	...	...	72,095,767	17,166	...	...	73,846,740	17,582·5
Hides and Horns	...	15	...	0·5	...	1,302	...	46·5	1,317	...	...	47
Other minor products ...	...	3,312	...	118	...	221,096	...	7,896	...	224,408	...	8,014·5
Mineral products	...	...	...	...	195,050	...	...	...	195,950	...	...	...
Total ...	...	...	...	3,139	...	...	...	139,934	...	...	...	143,073

The amount of forest produce consumed by forest villagers who are allowed to commute is again not forthcoming. This is to be regretted. (The Conservator's desire to show the yield of individual forests is a most laudable one, and may be expected when his Office establishments are increased.)

According to the figures given, the respective yield of the 1st and 2nd class Reserves per square mile was as follows :—

Class of Forests.	Total.			Per square mile.		
	Timber, Fuel, and Bamboos.	Other Produce.	Total.	Timber, Fuel, and Bamboos.	Other Produce.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1st class Reserves	32,418	11,435	43,853	10	3	13
2nd ditto	85,010	14,210	99,220	5	1	6
Total ...	117,428	25,645	143,073	6	1	7

This shows a falling off in the receipts from the 2nd class Reserves, and an increase from the 1st class Reserves. The average of 13 tons per square mile in the latter has been maintained, notwithstanding the increase in area of 70 square miles.

British Burma.

86. The following table exhibits the girdling operations of the year under review, as compared with those of the previous year :—

Circle.	Teak.			Other Trees.
	Inside Reserves.	Outside Reserves.	Total.	
Pegu	1,731	13,715	15,446	2,885
Tenasserim	2,054	646	2,700	3,124
Total in 1884-85 ...	3,785	14,361	18,146	6,009
„ 1883-84 ...	6,700	9,605	16,305	4,808
Increase or decrease in 1884-85 ...	—2,915	4,756	1,841	1,201

For Pegu, the forecast of 1880 gave 15,000 as the number of trees to be annually girdled. The excess of 446 trees is to be accounted for by the Working-Plan for the Thônzè Reserve giving an annual possibility of 1,000 trees, against 300 in the forecast, and by the number of trees to be girdled outside the Reserves having been largely underestimated. For Tenasserim the forecast allowed 1,000 trees per annum. The increase over the forecast of 1,700 trees is also to be accounted for by the short estimate of the trees outside Reserves, and in 1883-84 no trees at all were girdled inside Reserves.

The yield of the forests, as summarised under the different main heads of working, was as follows :—

	Teak.	Other kinds.	Total.
	Tons.	Tons.	Tons.
By Government Agency	44,149	9,993	54,142
By Purchasers and under Trade-permits ...	466	73,866	74,332
Under Free-permits	712	843	1,555
By Lease-holders	2,681	80	2,761
Total in 1884-85 ...	48,008	84,782	132,790
„ 1883-84 ...	40,448	73,409	113,857
Increase in 1884-85 ...	7,560	11,373	18,933

The increase in the outturn of teak almost counterbalances the falling off of last year.

The imports of foreign timber into British Burma were :—

In 1884-85—35,502 logs in Pegu, and 158,103 tons in Tenasserim.
In 1883-84—47,835 „ „ „ 169,400 „ „

Assessing the Pegu logs at 40 cubic feet per log, the imports amounted to 226,504 tons of timber, against only 147,977 tons exported, leaving the produce of the British Burma forests out of the question (132,790 tons).

Assam.

87. The following table exhibits the outturn of the Government Forests in Assam proper :—

Class of Forests.	Number of Trees.			Total.		Poles, Boats, Dead Wood, &c.	Grand Total.
	Sál.	Other valuable Trees reserved in Protected and District Forests.	Miscellaneous Trees.	No.	Cubic contents.		
						C. ft.	C. ft.
From Reserved Forests ...	2,676	460	1,468	4,604	138,120	92,875	230,995
„ Protected and District Forests ...	897	1,779	3,083	5,759	172,770	108,475	281,245
Total In 1884-85 ...	3,573	2,239	4,551	10,363	310,890	201,350	512,240
„ in 1883-84 ...	5,892	3,093	2,464	11,449	343,470	321,515	664,985
Increase or decrease in 1884-85 ...	—2,319	—854	2,087	—1,086	—32,580	—120,165	—152,745

The decrease, although not so marked as in 1883-84, has continued.

The yield of the Government Forests in the Cachar and Sylhet Districts, as compared with that of the previous year, is shown as follows :—

Year.	Logs.	Posts and Planks,	Firewood.	Total.
	C. ft.	C. ft.	C. ft.	C. ft.
1884-85	254,559	2,491	9,710	266,760
1883-84	221,425	92	6,828	228,345
Increase in 1884-85 ...	33,134	2,399	2,882	38,415

The Rubber Mahals brought in Rs. 20,660, as against Rs. 36,700 last year.

The imports into Assam of rubber are estimated at 802 maunds, against 1,642 maunds last year; and the exports at 8,092 maunds, against 10,244 maunds. The local yield was therefore 1,312 maunds less than last year.

The loss to Government on 6,632 trees given free of royalty to the Assam Railways and Trading Company is estimated at Rs. 25,948.

Coorg.

88. The number of trees felled by Government agency, as compared with that of the two previous years, is as follows :—

Year.	Teak.	Other Trees.	Total.
1884-85	658	843	1,501
1883-84	817	969	1,786
1882-83	494	1,186	1,680

The yield of the forests seems to have been as follows during the year under review :—

(*a*) In Reserved Forests :—

	Teak.	Other Trees.	Teak Poles.	Other Poles.	Bamboos.
	C. ft.	C. ft.	No.	No.	No.
By Government agency ...	28,116	26,779	198	1,505	115,934
By Purchasers	No. 3	No. 452	...	6	184,676
By Free grants	...	...	...	...	...
Total ...	...	...	198	1,511	300,610

(*b*) In Unreserved Forests :—

	Teak.	Other Trees.	Teak Poles.	Other Poles.	Bamboos.
	No.	No.	No.	No.	No.
By Government agency ...	...	...	...	...	...
By Purchasers	11	51	...	...	...
By Free grants	...	139	...	616	7,880
Total ...	11	190	...	616	7,880

(*c*) On alienated land—351 trees.

The sandalwood operations of the last five years have been as follows :—

Year.	Amount brought to Depôt.	Sold during the Year.		
		No. of Tons.	Amount realised.	
			Total.	Per Ton.
	Tons.		Rs.	Rs.
1880-81	118¼	112½	34,324	305
1881-82	126¾	60¾	14,059	231
1882-83	117½	192¼	77,407	403
1883-84	74½	36¼	10,908	301
1884-85	72¼	118¾	35,651	300

Although the amount sold in 1884-85 was three times that disposed of in 1883-84, yet the price has been maintained. The stock in hand, however, has been reduced from 107 to 60½ tons. The work will, in future, be done departmentally, the past year's operations having shown this method to be more satisfactory.

CHAPTER V.

Financial Results.

General.

89. The Receipts and Surplus of the various provinces during the year under review, arranged according to the total amount of Revenue, are as follows:—

No.	Provinces.	Revenue.	Surplus.	Deficit.	Proportion of Surplus to Gross Revenue, in per cent.
		Rs.	Rs.	Rs.	
1	Bombay	27,74,780	10,57,871	...	38
2	British Burma	16,70,980	4,58,748	...	27
3	North-Western Provinces and Oudh ...	15,72,319	5,52,217	...	35
4	Madras	11,62,689	2,49,503	...	21
5	Central Provinces	10,27,202	5,31,381	...	52
6	Punjab	7,49,352	1,91,282	...	22
7	Bengal	5,71,152	1,59,237	...	28
8	Berar	2,93,448	1,40,934	...	48
9	Assam	1,80,418	...	17,287	...
10	Coorg	1,13,233	36,282	...	32
11	Andamans	22,213	...	547	...
12	Ajmere	10,456	...	5,860	...
13	Baluchistan	6,089	...	7,177	...
14	Imperial	4,594	...	42,221	...
15	Forest Surveys (Berar)	934	...	33,870	...
16	Forest Surveys (Imperial)	234	...	19,589	...
17	Forest School	73	...	22,495	...
	Total ...	1,01,60,161	32,28,409	...	32

Burma, which had for so many years headed the list, has now, for the first time, to yield the first place to Bombay, which now stands first both in gross Revenue and in Surplus. The total Forest Revenue has fallen from 108 to 101½ lakhs, and the Surplus Revenue from 41½ to 32¼ lakhs.

90. The Surplus Revenue for the last five years is shown in the following table:—

Year.	British territory.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1880-81	18,07,005	2,17,610	3,55,460	23,80,075	1,37,588	25,17,663
1881-82	23,04,184	2,03,489	6,58,936	31,66,609	80,526	32,47,135
1882-83	26,42,642	2,61,090	8,11,583	37,15,315	1,36,960	38,52,275
1883-84	29,05,697	1,66,971	9,38,928	40,11,596	1,36,635	41,48,231
1884-85	18,13,971	2,49,503	10,57,871	31,21,345	1,07,064	32,28,409

Bengal.

91. The financial results, as compared with those of the previous year, were as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	5,71,152	4,11,915	1,59,237
1883-84	6,94,334	3,87,813	3,06,521
Increase or decrease in 1884-85	—1,23,182	24,102	—1,47,284

The falling off in the Receipts, although considerable, is reported to be of a temporary nature only, and the total Revenue of Rs. 5,71,152 is still in excess of the average of the last 8 years (Rs. 5,56,554).

The distribution of the Receipts and Surplus among the different classes of forests is as follows :—

Class of Forests.	Receipts.	Surplus.	Area of Forests.	Revenue per square mile.		
				Gross.	Net.	
					1884-85.	1883-84.
	Rs.	Rs.	Sq. Ms.	Rs.	Rs.	Rs.
Reserved Forests	4,41,692	79,434	4,882	90	16	46
Protected „	31,518	3,704	2,298	14	2	5
District „	97,942	76,099	4,313	23	18	19
Total ...	5,71,152	1,59,237	11,493	50	14	27

The Surplus from Reserved Forests continues to decrease, being per square mile Rs. 58 in 1882-83, Rs. 46 in 1883-84, and now only Rs. 16 in 1884-85.

North-Western Provinces and Oudh.

92. The financial results of the year were as follow :—

Circle.	Receipts.	Charges.	Surplus, 1884-85.	Surplus or Deficit, 1883-84.
	Rs.	Rs.	Rs.	Rs.
Central	4,92,497	2,61,912	2,30,585	2,68,388
Oudh	7,77,021	5,50,758	2,26,263	3,16,323
School	3,02,801	2,07,432	95,369	—15,213
Total in 1884-85 ...	15,72,319	10,20,102	5,52,217	...
„ „ 1883-84 ...	16,11,383	10,41,885	5,69,498	...
Decrease in 1884-85 ...	39,064	21,783	17,281	...

The School Circle has now for the first time, since 1880-81, returned a Surplus. During the last eight years the total Receipts have been Rs. 21,35,983, and the total Charges Rs. 21,25,191. This favourable result seems to have

been due to the abandonment of the system of employing contractors for the floating operations on the Jumna, and the adoption of departmental floating in its stead.

Punjab.

93. The financial results compare with those of the previous year as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	7,49,352	5,58,070	1,91,282
1883-84	9,10,177	6,53,146	2,57,031
Decrease in 1884-85	1,60,825	95,076	65,749

The decrease in Revenue was due to the year having been a bad floating one, resulting in diminished receipts in depôt and smaller sales; while the expenses were increased by $1\frac{1}{2}$ miles of tramway, and the payment of two years' water-rate for the Changa Manga Plantation.

Central Provinces.

94. The financial results were as follow :—

Class of Forests.	Receipts.	Charges.	Surplus.	
			Total.	Per square mile.
	Rs.	Rs.	Rs.	Rs.
1st class Reserves	2,20,487	2,37,482	*Def.* 16,995	*Def.* 5
2nd ditto	8,06,715	2,58,339	5,48,376	34
Total in 1884-85 ...	10,27,202	4,95,821	5,31,381	27
Ditto 1883-84 ...	9,94,769	4,36,058	5,58,711	29
Increase or decrease in 1884-85 ...	32,433	59,763	—27,330	—2

The diminution in the Surplus is due to the unusual charge of Rs. 60,000 for the purchase of the valuable Ahiri Forest (extension). The average Surplus of the last eight years from 1877-78 to 1884-85 has been Rs. 4,95,440.

British Burma.

95. There has been a great falling off of the Receipts, due to the fall in the price of teak. The Receipts and Charges are thus shown :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Pegu	12,71,328	9,04,119	3,67,209	29
Tenasserim	3,99,653	3,08,114	91,539	23
Total in 1884-85 ...	16,70,981	12,12,233	4,58,748	27
„ 1883-84 ...	25,09,275	12,17,824	12,91,451	51
Decrease in 1884-85 ...	8,38,294	5,591	8,32,703	24

Assam.

96. The financial results were as follow, compared with those of the previous year :—

Year.	Receipts.	Charges.	Surplus or Deficit.
	Rs.	Rs.	Rs.
1884-85	1,80,413	1,97,699	—17,286
1883-84	2,11,445	1,99,562	11,883
Decrease in 1884-85 ...	31,032	1,863	29,169

The financial results compare unfavourably with those of the previous year, as shown above. This is due to the dullness of the export trade with Bengal—the only lucrative portion of the working of the Assam forests just at present.

Coorg.

97. The financial results, compared with those of 1883-84, were as follow :—

Year.	Receipts.	Charges.	Surplus.
	Rs.	Rs.	Rs.
1884-85	1,13,233	76,952	36,281
1883-84	87,822	75,023	12,799
Increase in 1884-85 ...	25,411	1,929	23,482

Ajmere.

98. The financial results of the year under review, compared with those of the previous year, were as follow :—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1884-85	10,456	16,315	5,859
1883-84	8,198	14,574	6,376
Increase or decrease in 1884-85	2,258	1,741	—517

Berar.

99. The financial results of the year's working were as follow :—

Class of Forests.	Receipts.	Charges.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
State Reserves	47,271	63,793	...	16,522
District „	55,596	26,934	28,662	...
Unreserved Forests	1,90,581	61,787	1,28,794	...
Total in 1884-85 ...	2,93,448	1,52,514	1,40,934	...
„ 1883-84 ...	3,08,217	1,56,539	1,51,678	...
Decrease in 1884-85 ...	14,769	4,025	10,744	...

There has been a falling off since last year, but the results of the last eight years' working still show very well, being total Receipts Rs. 22,61,481, total Charges Rs. 10,66,808, total Surplus Rs. 11,94,697.

Baluchistan.

100. The following table shows the financial results of forest operations since their commencement in 1880-81 :—

Year.	Receipts.	Charges.	Surplus.	Deficits.
	Rs.	Rs.	Rs.	Rs.
1880-81	14,376	16,416	...	2,040
1881-82	18,616	17,682	934	...
1882-83	5,039	11,962	...	6,923
1883-84	4,752	16,911	...	12,159
1884-85	6,089	13,266	...	7,177
Total ...	48,872	76,237	...	27,365

Madras.

101. The general financial results of the year, as taken from the "Actuals" in the Madras Forest Budget Estimate for 1886-87, are :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	5,37,197	3,98,566	1,38,631	26
Southern	6,25,492	5,14,620	1,10,872	18
Total in 1884-85 ...	11,62,689	9,13,186	2,49,503	21
Total in 1883-84 ...	9,53,704	7,86,733	1,66,971	18
Increase in 1884-85 ...	2,08,985	1,26,453	82,532	3

Bombay.

102. The financial results are summarized as follow :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to Receipts, in per cent.
	Rs.	Rs.	Rs.	
Northern	10,08,725	6,90,088	3,18,637	32
Southern	12,89,562	6,64,378	6,25,184	48
Sind	4,76,493	3,62,443	1,14,050	24
Total in 1884-85 ...	27,74,780	17,16,909	10,57,871	38
„ in 1883-84 ...	25,03,100	15,64,172	9,38,928	38
Increase in 1884-85 ...	2,71,680	1,52,737	1,18,943	...

Exports of Forest Produce.

103. The following table shows the quantities of Forest Produce exported from India during the year :—

Articles.	Quantity, in tons of 20 cwt.; in the case of Teak, 50 cubic feet.		Valuation at port of shipment in 1884-85.	
	Average of 5 years, 1879-80 to 1883-84.	In 1884-85.	Total.	Per ton.
			Rs.	Rs.
Caoutchouc	518	406	7,73,289	1,905
Shell lac	3,930	5,337	45,36,326	850
Lac-dye	300	5	1,274	255
Cardamoms	90	24	6,57,112	27,380
Sandalwood, ebony, and other ornamental woods.	.....	(not known)	2,70,341	(not known)
Cutch and Gambier ...	12,906	12,308	28,21,085	229
Myrobalams	19,811	27,686	23,90,133	86
Teak	53,256	47,556	53,21,295	112
Total in 1884-85 ...	.....	...	1,67,70,855	...
„ 1883-84 ...	.....	...	1,74,29,723	...
Decrease in 1884-85 ...	.....	...	6,58,868	...

APPEN

STATE

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Imperial.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	British Burma.	Assam.	Coorg.	Ajmere.	Baluchistan.
REVENUE.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government Agency.	...	93,471	8,81,630	3,28,265	84,151	12,56,766	333	81,281	1,810	2,331
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	4,45,071	6,54,746	3,59,675	9,07,879	2,78,821	1,71,891	27,096	8,034	3,507
III.—Drift and waif wood and confiscated forest produce.	...	2,435	10,961	36,796	5,258	79,483	1,208	454	...	3
IV.—Revenue from forests not managed by Government.	...	288	8,932	2,702	9,884	30,965	3,742	...	...	154
V.—Miscellaneous ...	...	29,887	16,050	21,914	20,030	24,945	3,239	4,402	612	94
Total Revenue ...	4,594	5,71,152	15,72,319	7,49,352	10,27,202	16,70,980	1,80,413	1,13,233	10,456	6,089
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	...	71,585	4,38,024	1,06,473	36,060	7,64,038	2,687	17,175	802	1,643
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	27,239	42,066	2,103	1,71,031	7,560	6,071	...	96	35
III.—Drift and waif wood and confiscated forest produce.	...	847	4,244	9,696	...	45,471	68	...	...	...
IV.—Revenue from forests not managed by Government.	...	...	3,575	2,079	...	4,048	...	...	...	...
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	...	13,092	38,027	251	...	...	...	...	..
VI.—Live-stock, stores, tools and plant.	...	21,926	21,158	13,899	12,226	35,453	13,990	1,385	120	383
VII.—Communications and buildings.	...	37,280	1,01,992	10,809	5,882	17,331	24,067	1,712	972	192
VIII.—Demarcation, improvement, and extension of forests.	...	39,752	78,913	67,680	93,779	62,217	43,084	23,028	3,121	414
IX.—Miscellaneous ...	...	10,868	10,674	3,345	4,899	3,611	4,773	1,251	63	2
Total Conservancy and Works.	...	2,09,497	7,13,738	2,54,111	3,24,128	9,39,729	94,740	44,551	5,174	2,669
B.—Establishments.										
I.—Salaries	...	1,65,491	2,55,153	2,44,535	1,45,429	2,28,448	82,970	26,079	9,145	7,899
II.—Travelling allowances ...	...	27,162	35,900	42,388	13,409	35,088	16,295	5,515	1,434	2,477
III.—Contingencies ...	...	9,765	15,311	17,036	12,855	8,967	3,695	806	563	221
Total Establishments ...	...	2,02,418	3,06,364	3,03,959	1,71,693	2,72,503	1,02,960	32,400	11,142	10,597
Grand Total of Expenditure.	46,815	4,11,915	10,20,102	5,58,070	4,95,821	12,12,232	1,97,700	76,951	16,316	13,266
SURPLUS ...	...	1,59,237	5,52,217	1,91,282	5,31,381	4,58,748	...	36,282	...	...
DEFICIT ...	42,221	...	...	...	...	...	17,287	...	5,860	7,177

* The figures in this Statement have been revised by the Comptroller and Auditor General.

DICES.

MENT I.*

Department in India for the year 1884-85.

Andamans.	Forest School	Forest Surveys (Imperial).	Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Forest Surveys (Berar).	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs	Rs.	Rs.	Rs.	Rs.	Rs.	REVENUE.
...	...	...	27,30,038	3,79,185	17,30,785	48,40,008	...	...	48,40,008	I.—Timber and other produce removed from the forests by Government Agency.
...	...	...	28,56,720	7,47,973	9,39,670	45,44,363	2,90,389	...	48,34,752	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	1,36,598	8,841	9,008	1,54,447	1,299	...	1,55,746	III.—Drift and waif wood and confiscated forest produce.
...	...	...	56,667	...	39,202	95,869	...	...	95,869	IV.—Revenue from forests not managed by Government.
...	73	234	1,21,480	26,690	56,115	2,04,285	1,760	934	2,06,979	V.—Miscellaneous.
22,213	73	234	59,28,310†	11,62,689	27,74,780	98,65,779	2,93,448	934	1,01,60,161	Total Revenue.
										EXPENDITURE.
										A.—Conservancy and Works.
...	...	...	14,38,487	1,21,056	7,39,296	22,98,839	...	...	22,98,839	I.—Timber and other produce removed from the forests by Government Agency.
...	...	...	2,56,201	44,850	61,528	3,62,579	437	...	3,63,016	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	60,320	1,270	253	61,849	...	...	61,849	III.—Drift and waif wood and confiscated forest produce.
...	...	...	9,702	...	4,803	14,505	...	....	14,505	IV.—Revenue from forests not managed by Government.
...	...	...	51,370	13,600	21,024	85,994	17,120	...	1,03,114	V.—Rent of leased forests and payments to shareholders in forests managed by Government,
...	1,921	929	1,23,390	13,053	8,111	1,44,554	3,832	2,457	1,50,843	VI.—Live-stock, stores, tools and plant.
...	...	...	2,00,237	47,755	13,235	2,61,227	16,245	398	2,77,870	VII.—Communications and buildings.
...	...	2,110	4,14,098	1,47,378	2,94,250	8,55,726	8,599	5,018	8,69,343	VIII.—Demarcation, improvement, and extension of forests.
...	3,101	...	42,587	6,462	10,377	59,426	2,451	...	61,877	IX.—Miscellaneous.
...	5,022	3,079	25,96,398	3,95,424	11,52,877	41,44,699	48,684	7,873	42,01,256	Total Conservancy and Works,
										B.—Establishments.
...	15,196	14,880	11,95,225	3,83,538	4,20,304	19,99,067	80,888	18,758	20,98,713	I.—Salaries.
...	633	1,317	1,81,618	82,443	1,05,363	3,69,424	7,897	6,112	3,83,433	II.—Travelling allowances.
...	1,717	587	71,523	23,016	38,365	1,32,904	15.045	2,061	1,50,010	III.—Contingencies.
...	17,546	16,784	14,48,366	4,88.997	5,64,032	25,01,395	1,03,830	26,93:	26,32,156	Total Establishments.
				8,84,421 ‡28,765						
22,760	22,568	19,823	†41,14,339	9,13,186	17,16,909	67,44,434	1,52,514	34,804	69,31,752	Grand Total of Expenditure.
...	...	...	18,13,971	2,49,503	10,57,871	31,21,345	1,40,934	...	32,28,409	SURPLUS.
547	22,495	19,589	...	...	...	...	...	33,870	...	DEFICIT.

† These totals include, respectively, Revenue and Expenditure under "Imperial," which cannot satisfactorily be allotted to any particular budget sub-head; also under "Andamans," the details of which are not known at present.

‡ Unadjusted Advances.

STATEMENT II.*

Financial Results of Forest Administration for the year 1884-85.

Province.	Timber and other produce removed from the Forests by Government Agency.			Other Revenue.			Formation, Protection, and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs	Rs.	Rs.	Rs.	Rs.
Bengal	95,201	97,700	—2,499	4,75,951	1,25,406	3,50,545	1,88,809
North-Western Provinces and Oudh.	7,31,079	5,16,062	2,15,017	6,90,273	2,08,699	4,81,574	2,66,563
Punjab	3,65,047	2,62,461	1,02,586	3,84,305	1,12,322	2,71,983	1,83,287
Central Provinces	84,102	51,237	32,865	9,43,101	2,47,728	6,95,373	1,96,856
British Burma	12,95,778	9,01,341	3,94,437	3,75,203	1,49,183	2,26,020	1,61,709
Assam	1,540	2,756	—1,216	1,78,873	65,822	1,13,051	1,29,122
Coorg	81,281	29,540	51,741	31,952	6,866	25,086	40,546
Ajmere	1,810	802	1,008	8,646	4,616	4,030	10,898
Baluchistan	2,334	5,303	—2,969	3,753	3,697	56	4,266
Total ...	26,58,172	18,67,202	7,90,970	30,92,057	9,24,339	21,67,718	11,82,056
Berar	...	...	...	2,93,448	1,00,756	1,92,692	51,758
Total Bengal Presidency ...	26,58,172	18,67,202	7,90,970	33,85,505	10,25,095	23,60,410	12,33,814
Madras	3,85,391	2,68,752	1,16,639	7,77,298	3,14,951	4,62,347	3,00,718
Bombay	17,30,785	9,87,132	7,43,653	10,43,994	1,91,705	8,52,289	5,38,071
Grand Total ...	47,74,348	31,23,086	16,51,262	52,06,797	15,31,751	36,75,046	20,72,603

* The figures in this Statement are taken from Form No. 57 appended to the Annual Forest Reports.

STATEMENT III.*

Revenue, Expenditure, and Surplus of the Forest Department throughout India during the 21 years from 1864-65 to 1884-85.

REVENUE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial†	421	30,959	752	543	1,159	1,436	3,107	2,334	2,771	1,225	1,144	1,465	2,490	1,36,773	16,716	17,214	18,887	27,407	30,732	32,907	4,594
Bengal	19,760	38,658	45,590	56,039	70,715	2,44,657	1,03,249	1,44,719	1,49,852	1,79,366	1,85,932	1,98,274	2,22,401	4,26,228	4,16,927	4,49,524	5,61,340	6,33,734	6,93,959	6,94,334	5,71,152
North-Western Provinces and Oudh.	7,23,440	7,31,382	7,79,201	5,84,503	7,85,210	8,32,945	4,24,257	11,70,900	19,39,115	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,228	10,66,094	10,13,403	16,11,383	15,72,319
Punjab	5,27,081	3,50,680	3,96,050	2,80,510	3,44,882	3,94,129	9,47,236	7,10,216	6,52,995	7,32,539	8,34,874	9,09,831	5,98,754	6,83,711	5,00,619	6,49,819	6,71,678	6,88,308	7,66,709	9,10,177	7,49,352
Central Provinces	68,760	1,34,042	2,37,472	3,49,490	3,50,536	4,16,020	6,58,120	5,57,128	4,81,673	5,68,367	6,60,938	7,26,176	6,61,326	6,83,910	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769	10,27,202
British Burma	9,34,070	8,98,485	4,24,774	6,46,812	8,17,599	9,84,774	8,18,124	7,72,400	8,27,569	10,68,621	10,74,802	17,79,020	15,51,408	16,03,082	11,37,562	11,80,190	15,16,613	22,31,804	25,03,896	25,09,275	16,70,980
Assam	...	...	...	...	...	...	...	...	...	...	65,049	61,870	81,568	1,34,326	1,61,779	1,64,335	1,68,997	1,66,054	2,48,605	2,11,445	1,80,413
Coorg	57,488	1,01,167	32,508	79,082	98,496	1,08,135	72,144	92,466	84,425	1,10,284	58,015	1,07,460	75,927	1,01,014	52,020	1,01,786	87,857	1,00,364	1,38,022	87,822	1,13,233
Ajmere	...	...	...	...	...	...	...	...	24	304	202	410	905	3,002	1,241	1,861	1,124	4,065	7,126	8,198	10,456
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	...	...	21	...	...	63	38	272	...	348	36	234
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	73
Andamans	2,808	2,515	3,495	6,070	5,071	3,036	7,373	5,880	6,862	4,184	5,516	5,363	4,679	1,301	5,564	2,437	27,734	48,407	70,858	21,762	22,213
Total ...	23,33,828	22,87,878	19,19,842	20,03,049	24,73,663	29,85,132	30,33,610	34,56,043	41,45,286	45,97,567	42,50,730	50,54,246	43,50,129	49,76,455	42,71,208	46,13,894	48,46,869	61,39,121	64,51,305	70,85,108	59,22,221
Madras	4,49,770	4,76,674	4,48,110	5,81,342	5,29,185	6,97,699	5,33,412	5,76,261	5,05,188	6,13,653	5,14,401	6,77,873	5,92,573	5,50,310	6,06,788	6,26,168	7,36,880	8,06,908	9,06,442	9,53,704	11,62,689
Bombay	10,81,007	10,07,611	8,21,268	8,84,244	12,13,493	12,35,257	11,69,401	11,50,215	11,46,405	11,88,089	12,24,051	12,48,672	12,26,658	12,61,528	11,81,894	15,24,712	15,22,807	18,28,117	20,90,353	25,03,100	27,71,780
Total (British India) ...	38,65,505	37,72,163	31,89,220	34,68,635	42,16,336	49,18,088	47,35,423	51,82,519	58,86,879	63,99,309	59,89,182	69,80,791	61,69,360	67,88,293	60,59,890	67,64,774	71,06,556	87,74,146	94,48,100	1,05,41,912	98,59,690
Berar	2,368	15,106	43,574	53,440	84,557	1,80,397	1,77,329	1,55,543	2,56,563	2,63,256	2,60,074	2,32,782	2,53,072	2,79,236	2,83,704	3,07,500	2,66,556	2,33,511	2,92,014	3,08,217	2,93,148
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	934
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,616	5,030	4,752	6,089
GRAND TOTAL ...	38,67,873	37,87,269	32,32,794	35,22,075	43,00,893	50,98,485	49,12,752	53,38,062	61,43,442	66,62,565	62,49,856	72,13,573	64,22,432	70,67,529	63,48,594	70,72,274	73,87,488	90,26,273	97,45,153	1,08,54,881	1,01,60,161

* The figures in this Statement have been revised by the Comptroller and Auditor General.
† Includes certain Home Receipts, and undistributable and petty local items.

STATEMENT III—*continued.*

EXPENDITURE.

Provinces.	1864 65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs	Rs.	Rs.
Imperial*	44,207	16,981	32,078	38,924	33,007	54,106	51,423	66,530	67,150	79,216	81,210	48,239	44,004	98,009	63,956	73,810	65,291	77,635	87,263	98,266	46,815
Bengal	3,971	45,292	1,05,215	1,67,495	1,15,933	1,17,899	86,479	1,10,989	1,00,777	1,39,274	1,01,361	1,42,676	2,14,497	2,62,913	3,38,675	2,75,748	3,35,381	3,94,612	3,82,183	3,87,813	4,11,915
North-Western Provinces and Oudh.	5,03,580	3,31,261	4,10,205	3,89,806	5,01,021	5,29,422	8,10,073	11,10,071	11,74,666	11,90,794	10,61,302	7,36,979	8,61,362	7,28,9-6	8,09,977	7,16,594	6,79,574	9,16,212	8,39,025	10,41,885	10,20,102
Punjab	5,78,616	2,71,369	2,63,373	2,88,029	3,17,634	7,41,432	11,95,655	7,07,619	8,90,369	6,11,556	6,58,983	5,56,911	5,25,059	5,20,631	5,23,554	4,80,676	4,95,368	5,16,269	5,60,750	6,53,146	5,58,070
Central Provinces	1,55,270	1,08,597	1,49,408	2,18,434	3,19,126	4,74,930	3,17,928	2,31,633	2,50,578	2,85,939	2,94,449	3,73,327	2,90,295	3,22,034	3,93,758	5,22,574	4,95,512	4,97,013	4,12,247	4,36,058	4,95,821
British Burma	2,62,930	3,11,941	2,86,993	3,30,526	4,24,333	4,22,106	4,00,851	3,79,217	3,36,759	4,75,304	6,63,547	8,15,659	10,05,554	8,59,231	7,18,402	7,53,490	7,12,568	11,50,224	12,28,955	12,17,824	12,12,232
Assam	...	...	...	...	...	...	...	...	...	...	60,367	63,397	90,520	1,01,153	1,26,028	1,32,829	1,42,725	1,65,361	1,71,823	1,99,562	1,97,700
Coorg	3,407	12,996	8,650	13,732	17,848	33,064	24,747	70,178	29,479	45,952	37,999	40,168	33,692	36,208	34,829	55,165	56,487	59,796	64,770	75,023	76,951
Ajmere	...	...	...	...	...	...	...	...	13,654	17,932	15,281	27,346	22,460	14,926	13,445	13,750	12,423	13,954	11,284	14,574	16,316
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	59,556	78,090	58,930	58,929	60,165	60,325	46,878	40,335	42,489	41,595	30,940	19,823
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	22,568
Andamans	...	...	...	...	...	150	...	1,651	1,896	...	...	...	1,307	1,096	...	7,177	2,160	2,306	1,840	12,161	23,700
Total ...	15,51,981	10,98,437	12,55,922	14,46,936	17,28,902	23,73,109	28,87,156	26,79,888	28,64,728	29,05,523	30,52,589	28,63,632	31,48,279	30,04,442	30,82,940	30,72,691	30,37,824	38,35,871	38,01,740	41,67,252	40,78,313
Madras	2,64,780	3,51,392	3,42,827	4,02,674	4,01,617	4,21,316	4,47,267	3,91,921	5,48,746	4,74,920	5,95,941	5,92,039	6,35,560	5,65,624	4,95,914	5,48,527	5,19,270	6,03,419	5,45,352	7,86,733	9,13,186
Bombay	3,72,187	7,77,139	6,51,611	5,55,039	6,31,226	5,56,015	6,39,759	5,97,831	7,25,031	7,21,594	8,36,675	7,94,141	8,38,079	8,77,716	10,04,923	10,76,089	11,67,347	11,69,181	12,78,770	15,64,172	17,16,909
Total (British India) ...	21,88,948	22,26,968	22,50,390	24,04,649	27,61,745	33,50,440	39,74,182	36,67,640	41,38,505	41,02,037	44,85,205	42,49,812	46,22,818	44,47,782	45,83,786	46,98,307	47,24,441	56,08,471	57,25,862	65,18,157	67,08,408
Berar	478	8,991	13,718	18,669	34,105	81,569	81,072	1,00,829	88,631	86,350	91,389	91,499	94,652	1,09,668	1,07,350	1,10,506	1,28,968	1,52,985	1,55,054	1,56,539	1,52,514
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15,013	34,804
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16,416	17,682	11,962	16,911	13,266
GRAND TOTAL ...	21,89,426	22,35,959	22,64,108	24,23,318	27,95,850	34,32,009	40,56,154	37,68,469	42,22,136	41,88,387	45,76,594	43,41,311	47,17,470	45,57,750	46,91,136	48,09,713	48,69,825	57,79,138	58,92,878	67,06,650	69,31,752

*Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

STATEMENT III—*concluded.*

SURPLUS.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	—43,786	13,978	—31,326	—38,381	—31,949	—52,670	—48,316	—64,196	—64,379	—77,991	—80,066	—46,774	—41,514	38,674	—47,240	—56,598	—46,404	—50,228	—56,536	—65,359	—42,221
Bengal	15,789	—6,634	—59,625	—1,11,456	—45,218	1,26,758	16,770	33,780	49,075	40,092	84,571	55,598	7,904	1,62,315	77,352	1,73,776	2,25,959	2,39,122	3,11,776	3,06,521	1,59,237
North-Western Provinces and Oudh.	2,19,860	4,00,121	3,69,996	1,94,697	2,84,189	3,03,523	—3,85,816	60,829	7,64,449	7,41,883	3,02,056	5,27,377	2,89,309	4,74,132	3,16,778	3,23,372	2,62,654	1,49,882	1,74,378	5,69,498	5,52,217
Punjab	—51,535	79,311	1,32,677	—7,519	27,248	—3,47,303	—2,48,419	2,597	—2,37,374	1,20,983	1,75,891	3,52,020	73,095	1,63,080	—22,935	1,69,143	1,76,310	1,72,039	2,05,959	2,57,031	1,91,282
Central Provinces	—86,510	25,445	88,064	1,31,056	31,410	—58,910	3,40,102	3,25,495	2,31,095	2,82,428	3,66,489	3,52,849	3,71,031	3,61,876	4,59,104	4,84,150	3,54,627	6,75,871	5,65,400	5,58,711	5,31,381
British Burma	6,71,140	5,86,544	1,37,781	3,16,286	3,93,266	5,62,668	4,17,273	3,93,183	4,90,810	5,93,317	4,11,255	9,63,361	5,45,854	7,44,851	4,19,160	4,26,700	8,04,045	10,81,580	12,74,941	12,91,451	4,58,748
Assam	...	...	...	...	...	...	...	...	...	...	5,582	—1,527	—8,952	33,173	35,751	31,506	26,272	693	76,782	11,883	—17,287
Coorg	54,081	88,161	23,858	65,360	80,648	75,071	47,397	22,288	54,946	64,332	20,016	67,292	42,235	64,746	17,191	46,621	31,370	40,568	73,252	12,799	36,282
Ajmere	...	...	...	...	...	...	...	...	—13,030	—17,628	—15,079	—26,936	—21,555	—11,924	—12,204	—11,889	—11,299	—9,889	—4,158	—6,376	—5,860
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	—59,556	—78,090	—58,909	—58,929	—60,165	—60,262	—46,840	—40,063	—42,489	—41,247	—30,904	—19,589
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—22,495
Andamans	2,808	2,515	3,495	6,070	5,071	2,886	7,373	4,229	4,966	4,184	5,516	5,363	3,372	205	5,564	—4,740	25,574	46,101	69,018	12,601	—547
Total ...	7,81,847	11,89,441	6,63,920	5,56,113	7,44,766	6,12,023	1,46,454	7,78,155	12,80,558	16,92,044	11,98,141	21,90,614	12,01,850	19,72,013	11,88,259	15,35,203	18,09,045	23,03,250	26,49,565	29,17,856	18,21,148
Madras	1,84,990	1,25,282	1,05,283	1,78,668	1,27,568	2,76,383	86,145	1,84,340	46,442	1,38,733	—81,540	85,834	—42,987	—15,314	1,10,874	77,641	2,17,610	2,03,489	2,61,090	1,66,971	2,49,503
Bombay	7,09,720	2,30,472	1,69,627	3,29,205	5,82,257	6,79,242	5,28,642	5,52,384	4,21,374	4,66,495	3,87,376	4,54,531	3,87,679	3,83,812	1,76,971	4,47,723	3,55,460	6,58,036	8,11,583	9,38,928	10,57,871
Total (British India) ...	16,76,557	15,45,195	9,38,830	10,63,986	14,54,591	15,67,648	7,61,241	15,14,879	17,48,374	22,97,272	15,03,977	27,30,979	15,46,542	23,40,511	14,76,104	20,60,567	23,82,115	31,65,675	37,22,238	40,23,755	31,28,522
Berar	1,890	6,115	29,856	34,771	50,452	98,328	95,357	54,714	1,72,932	1,76,906	1,69,285	1,41,283	1,58,420	1,69,268	1,81,354	1,96,994	1,37,588	80,526	1,36,960	1,51,678	1,40,934
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—15,043	—33,870
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—2,040	934	—6,923	—12,159	—7,177
GRAND TOTAL ...	16,78,447	15,51,310	9,68,686	10,98,757	15,05,043	16,66,476	8,56,598	15,69,593	19,21,306	24,74,178	16,73,262	28,72,262	17,04,962	25,09,779	16,57,458	22,57,561	25,17,663	32,47,135	38,52,275	41,48,231	32,28,409

* Includes pay of Inspector General of Forests, certain Home Charges, and undistributable and petty local items.

Appendix A.

RESULTS OF FIRE-PROTECTION IN THE PROVINCES UNDER THE GOVERNMENT OF INDIA.

FIRE-PROTECTION IN THE WHOLE OF INDIA (UNDER THE GOVERNMENT OF INDIA).

Circle.	Total Number of Acres.				Total Cost.	Cost per Acre, in Pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs.				
Bengal	3,971,489	400,645	3,570,844	3,178,358	83,866	4·054	4·509	5·066	0·10088
North-Western Provinces and Oudh, Central Circle	1,922,227	110,782	1,811,445	1,670,121	127,569	12·742	13·521	14·666	0·05763
„ „ „ Oudh Circle	1,604,920	115,723	1,489,197	1,278,279	71,001	8·494	9·154	10·664	0·07210
„ „ School Circle	997,140	22,204	974,936	947,625	60,610	11·675	11·936	12·280	0·02227
Central Provinces	8,521,979	632,235	7,889,744	6,973,560	179,491	4·044	4·368	4·942	0·07419
British Burma, Pegu Circle	635,041	34,695	600,346	544,240	114,871	34·730	36·737	40·525	0·05463
„ „ Tenasserim Circle	472,464	55,959	416,505	360,252	15,902	6·462	7·330	8·475	0·11823
Assam	1,008,478	205,023	803,455	570,364	61,521	11·713	14·701	20·710	0·20309
Berar	7,166,298	591,802	6,574,496	6,026,324	40,967	1·097	1·193	1·305	0·08258
Total ...	26,300,036	2,169,068	24,130,968	21,549,123	755,798	5·517	6·013	6·734	0·08247

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BENGAL.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Senchal, Mahalderam, Tukdah, and Goompahar ...	4	98,448	...	98,448	97,152	547 12 0	1·068	1·068	1·082	...
Singalila	3	123,762	72	123,690	123,606	643 0 0	0·997	0·998	1·007	0·00058
West Teesta	6	102,528	300	102,228	102,078	1,314 12 0	2·462	2·469	2·473	0·00292
East Teesta	6	218,054	270	217,784	217,018	1,560 3 6	1·374	1·375	1·380	0 00124
Pankasari	4	262,308	50	262,258	261,808	818 0 0	0·599	0·599	0·600	0·00019
Chel	6	191,190	857	190,333	189,774	959 0 0	0·963	0·967	0·970	0·00448
Kurseong	3	8,241	...	8,241	8,241	67 0 0	1·561	1·561	1·561	...
Manjua	3	2,910	...	2,910	2,910	276 0 0	18·210	18 210	18·210	...
Manjha	6	19,434	1,196	18,238	17,008	820 3 0	8·103	8·634	9·259	0·06154
Rest of Balasan	4	31,947	1,527	30,420	29,480	309 0 0	0·517	0·543	0·560	0·04780
Tukria Jhar	3	4,092	154	3,938	3,938	266 0 0	12·481	12·969	12·969	0·03763
Dalka Jhar and Pantapari	6	46,818	3,331	43,487	31,068	3,505 12 0	14·377	15·487	21·631	0·07115
Bamonpokri	9	14,891	220	14,671	14,331	6,490 10 9	83·761	85·017	87·034	0·01477
Sukna and Champasari	6	200,896	16,047	184,849	145,322	10,505 7 0	10·042	10·912	13·880	0·07988
Siligori	...	...	...	...	...	29 0 0	...	...	...	...
Apalchand	7	117,932	26,480	91,452	80,478	3,608 0 0	5·874	7·575	8·608	0·22453
Tondu	7	364,400	50,990	313,410	255,670	2,592 14 0	1·366	1·588	1·947	0·13990
Muraghat	9	98,020	20,160	77,860	55,770	1,008 6 0	1·975	2·486	3·471	0·20567
Rest of Muraghat	4	80,492	9,426	71,066	48,268	331 0 0	0·789	0·894	1·316	0·11710
Dulgaon	6	8,250	2,280	5,970	570	361 12 0	8·419	11·634	121·853	0·27636
Dumchi	6	18,372	500	17,872	16,872	192 0 0	2·005	2·063	2·185	0·02722
Falakata	3	28,734	...	28,734	28,710	636 0 0	4·250	4·250	4·253	...
Borojhar	6	94,080	940	93,140	92,840	2,787 6 0	5·688	5·746	5·773	0·00999
Salkner	2	2,440	...	2,440	2,440	206 0 0	16·202	16·202	16·202	...
Buxa	9	699,692	93,250	606,442	542,310	27,764 10 3	7·604	8·790	9·830	0·13327
Raidak	3	19,200	3,900	15,300	12,100	699 0 0	6·990	8·772	11·091	0·20312
Bholka	8	102,400	8,040	94,360	88,320	3,103 14 0	5·819	6·313	6·747	0·07852
Kechki, Betlah, Saidope, and Tungari	6	240,147	14,560	225,587	213,650	2,821 14 0	2·257	2·402	2·536	0·06063
Ramundag and Kumandi	6	120,264	23,841	96,423	64,902	2,445 14 9	3·905	4·870	7·236	0·19824
Barasand	6	189,293	13,340	175,953	170,104	2,312 3 6	2·345	2·523	2·609	0·07047
Seemah	6	157,440	18,460	138,980	120,520	2,238 5 0	2·729	3·092	3·566	0·11725
Koderma	6	138,414	30,387	108,027	34,767	904 15 0	1·255	1·609	4·998	0·21954
Sitapahar	...	...	Abandoned.	...	...	699 0 0	...	...	...	...
Porohat	1	3,840	...	3,840	3,840	225 0 0	11·250	11·250	11·250	...
Saranda	1	...	...	...	...	286 0 0	...	...	...	...
Saitba	1	18,560	15,480	3,080	3,080	64 0 0	0·662	3·989	3·989	0·83405
Kolhan	1	...	...	...	...	119 0 0	...	...	...	...
Tikarpara	1	103,040	32,000	71,040	71,040	68 0 0	0·127	0·184	0·184	0·31056
Bagmunda	1	40,960	12,587	28,373	28,373	140 0 0	0·656	0·947	0·947	0·30730
Durgapur	1	...	...	...	...	129 0 0	...	...	...	...
Dandimal	1	...	...	...	...	10 0 0	...	...	...	...
Total ...	...	3,971,489	400,645	3,570,844	3,178,358	83,366 8 9	4·054	4·509	5·066	0·10088

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BENGAL.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs.				
1872-73	...	...	...	...	30	...	...	...	...
1873-74	...	...	...	...	167	...	...	...	...
1874-75	...	...	...	...	93	...	...	...	...
1875-76	...	...	...	...	409	...	...	...	...
1876-77	59,653	80	59,573	51,293	1,546	4·976	4·982	5·787	0·0134
1877-78	116,173	42,340	73,833	63,733	1,963	3·244	5·105	5·912	0·36446
1878-79	179,533	77,780	101,753	99,043	2,740	2·930	5·170	5·312	0·43323
1879-80	447,531	24,731	422,800	298,651	11,333	4·862	5·146	7·286	0·05526
1880-81	461,091	54,364	406,727	310,281	8,878	3·697	4·191	5·494	0·11790
1881-82	588,393	31,174	557,219	482,738	13,093	4·273	4·511	5·207	0·05299
1882-83	641,937	39,788	602,149	553,907	11,699	3·499	3·730	4·055	0·06198
1883-84	655,395	38,529	616,866	588,788	15,841	4·641	4·930	5·169	0·05879
1884-85	821,783	91,859	729,924	729,924	16,122	3·767	4·41	4·241	0·11178
Total ...	3,971,489	400,645	3,570,844	3,178,358	83,866	4·054	4·509	5·066	0·10088

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

CENTRAL CIRCLE.

ABSTRACT OF BLOCKS.

Division or District.	Forest Tract.	No. of Years under Protection.	Total Number of Acres.				Cost.	Cost per Acre, in Pies.			Co-efficient of Failure.
			Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
							Rs.				
Ganges.	Papidanda	9	Abandoned in 1884-85 ...			...	1,260	...	...	...	...
	Sukvas	4	6,000	136	5,864	5,748	420	13·440	13·752	14·029	0·02267
	Kauria, Andhermajhera, and Jogichaur	5	30,000	911	29,089	27,012	1,674	10·713	11·049	11·899	0·03037
	Hazara	5	10,000	1,700	8,300	6,600	482	9·254	11·150	14·022	0·17000
	Tagnore	9	Abandoned after 1884-85...			...	184	...	...	...	...
Kumaun.	Hura	2	5,482	...	5,482	5,482	2,385	83·532	83·532	83·532	...
	Jamla Sal	3	23,619	624	22,995	22,371	7,116	57·846	59·416	61·073	0·02642
	Nindhore	4	31,811	3,453	28,358	26,996	2,121	12·801	14·360	15·085	0·10885
	Lakhman-Mandi	3	6,000	...	6,000	6,000	488	15·616	15·616	15·616	...
	Salani	9	2,880	200	2,680	1,480	308	20·533	22·065	39·957	0·06944
Garhwal.	Dikala	13	167,681	15,331	152,350	136,396	13,355	15·292	16·831	18·792	0·09143
	Patairpani, Maumpani, and Jamnagwar	8	168,428	8,901	159,527	158,442	9,233	10·531	11·112	11·188	0·05344
	Pipalsot and Gaujpani	7	23,766	2,682	21,084	13,566	1,492	12·054	13·587	21·116	0·11284
	Jarasot and Jamnoli	7	48,209	260	47,949	47,849	2,614	10·411	10·467	10·489	0·00589
	Bhakwa and Damunda	6	67,889	756	67,133	65,874	5,713	16·157	16·339	16·651	0·01113
	Phalai and Ganjera	5	34,785	40	34,745	34,665	2,118	11·690	11·704	11·731	0·00115
	Haldgaddi and Adnala	4	129,876	5,446	124,430	117,138	7,708	11·395	11·894	12·634	0·04193
	Shisham-Khata	9	18,080	2,540	15,540	12,224	2,912	30·924	35 979	45·738	0·14049
	Rebar	5	61,950	11,472	50,478	50,258	6,927	21·469	26·347	26·463	0·18518
	Chilkia Mohan	14	535,639	30,430	505,209	437,852	33,438	11·988	12·707	14·663	0·05681
	Kota	9	208,526	8,365	200,161	188,898	12,056	11·100	11·564	12·253	0·04011
	Garibulchand	9	64,444	5,300	59,144	48,792	6,277	18·701	20·377	24·700	0·08224
Naini Tal.	Naini Tal	10	194,190	10,888	183,302	176,186	4,411	4·361	4·656	4·807	0·05607
	Ranikhet	10	43,329	725	42,604	41,939	1,122	4·972	5·056	5·136	0·01673
	Seoni	6	15,360	61	15,299	15,156	451	5·637	5·660	5·713	0·00397
	Ganiadeoli	8	6,400	127	6,273	6,092	382	11·460	11·692	12·039	0·01984
	Kathallekh	8	8,080	280	7,800	7,720	451	10·717	11·102	11·217	0·03465
	Padholi	4	2,560	139	2,421	2,185	174	13·081	13·800	15·290	0·05430
	Chaubatha	4	5,120	13	5,107	5,081	245	9·188	9·211	9·258	0·00254
	Chilianao	2	1,280	2	1,278	1,276	37	5·550	5·560	5·570	0·00156
	Karchuli	1	203	...	203	203	3	2·837	2·837	2·837	...
	Siun	1	640	...	640	640	12	3·600	3·600	3·600	...
	Total ...	...	1,922,227	110,782	1,811,445	1,670,121	127,569	12·742	13·521	14·666	0·05763

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

CENTRAL CIRCLE.

ABSTRACT OF YEARS.

YEAR.	TOTAL NUMBER OF ACRES.				COST.	COST PER ACRE, IN PIES.			CO-EFFICIENT OF FAILURE.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1871-72	12,800	...	12,800	640	112 0 0	1·680	1·680	33·600	...
1872-73	16,473	12,160	4,313	4,160	403 0 0	4·697	17·940	18·600	0·73817
1873-74	20,160	...	20,160	20,160	828 0 0	7·886	7·886	7·886	...
1874-75	29,899	...	29,899	24,187	3,838 0 0	23·977	23·977	29·640	...
1875-76	85,954	11,152	74,802	50,442	6,801 11 0	15·193	17·458	25·889	0·12974
1876-77	113,815	1,123	112,692	81,061	5,597 10 3	9·433	9·537	13·259	0·00987
1877-78	143,209	10,891	132,318	97,623	11,534 8 2	15·464	16·737	22·685	0·07605
1878-79	151,846	41,254	110,592	109,022	6,724 7 8	8·502	11·674	11·842	0·27168
1879-80	165,510	481	165,029	157,918	11,794 2 6	13·682	13·722	14·339	0·00291
1880-81	193,198	11,340	181,858	173,426	12,355 11 6	12·279	13·045	13·679	0·05869
1881-82	233,663	8,655	225,008	218,103	16,145 13 11	13·780	14·311	14·764	0·03708
1882-83	250,531	3,657	246,874	238,510	17,820 12 10	13·657	13·859	14·346	0·01459
1883-84	252,163	9,538	242,625	242,394	17,760 15 5	13·523	14·055	14·068	0·03785
1884-85	253,006	531	252,475	252,475	15,851 15 9	11·825	11·849	11·849	0·00210
TOTAL ...	1,922,227	110,782	1,811,445	1,670,121	1,27,568 13 0	12·742	13·521	14·666	0·05763

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted &c., year by year.

OUDH CIRCLE.

ABSTRACT OF BLOCKS.

FOREST TRACT.	No. OF YEARS UNDER PROTECTION.	TOTAL NUMBER OF ACRES.				COST.	COST PER ACRE, IN PIES.			CO-EFFICIENT OF FAILURE.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Mahofe	6	129,186	32,017	97,169	70,428	9,403 10 4	13·976	18·581	25·636	0·24783
Marha	9	112,221	14,249	97,972	85,905	9,592 3 2	16·411	18·797	21·439	0·12697
Dudua	13	235,190	24,850	210,340	127,600	19,779 12 3	16·142	18·049	29·753	0·10566
Kasumbha	5	99,200	18,880	80,320	36,480	4,678 14 2	9·056	11·184	24·626	0·19032
Nishangarh	8	147,210	6,415	140,795	139,823	4,753 8 3	6·200	6·482	6·527	0·04357
Gorakhpur	10	724,696	18,001	706,695	663,911	12,241 2 10	3·243	3·325	3·540	0·02484
Bahraich	12	157,217	1,311	155,906	154,132	10,552 4 5	12·886	12·995	13·145	0·00833
TOTAL ...	...	1,604,920	115,723	1,489,197	1,278,279	71,001 7 5	8·494	9·154	10·664	0·07215

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

OUDH CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per Acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
	Acres.	Acres.	Acres.	Acres.	Rs.				
1872-73	12,800	...	12,800	3,420	123	1·845	1·845	6·954	...
1873-74	20,480	...	20,480	11,100	152	1·425	1·425	2·629	...
1874-75	20,480	...	20,480	11,100	2,573	24·122	24·122	44·506	...
1875-76	82,266	...	82,266	72,886	2,778	6·483	6·483	7·318	...
1876-77	104,367	1,400	102,967	79,577	4,642	8·880	8·889	11·200	0·01341
1877-78	114,535	13,020	101,515	87,070	3,359	5·631	6·353	7·406	0·11368
1878-79	116,895	13,940	102,955	96,550	3,552	5·834	6·624	7·063	0·11925
1879-80	145,389	4,297	141,092	117,067	7,402	9·775	10·072	12·140	0·02955
1880-81	178,619	4,865	173,754	129,165	7,163	7·700	7·915	10·648	0·02724
1881-82	182,190	32,660	149,530	129,165	9,732	10·256	12·475	12·496	0·17926
1882-83	184,064	1,877	182,187	142,008	7,248	7·550	7·633	9·800	0·01019
1883-84	188,867	41,186	147,681	147,681	10,472	10·645	13·615	13·615	0·21806
1884-85	253,968	2,478	251,490	251,490	11,805	8·925	9·008	9·008	0·00976
Total ...	1,604,920	115,723	1,489,197	1,278,279	71,001	8·494	9·154	10·664	0·07215

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

SCHOOL CIRCLE.

ABSTRACT OF BLOCKS.

	Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
			Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Failed.	
							Rs.				
Dehra Dun.	Ramgarh	6	38,532	234	38,298	37,760	4,001	19·93	20·060	20·34	0·00607
	Bulawala	14	115,480	6,788	108,692	108,692	14,146	22·046	23·424	23·424	0·05878
	Nagsidh	2	9,495	10	9,485	9,485	1,046	21·15	21·18	21·18	0·00105
	Kansrau	6	44,888	453	44,435	44,323	4,517	19·32	19·52	19·57	0·01009
	Motichur	2	7,645	...	7,645	7,432	575	13·44	13·44	13·82	...
	Thano	6	35,217	2,127	33,090	29,148	5,603	30·545	32·508	36·914	0·06039
	Chandrabani	6	30,250	1,068	29,182	26,557	3,287	20·06	21·63	23·99	0·03535
	Sherpur	1	12,101	500	11,601	11,601	367	5·82	6·07	6·07	0·04132
	Timli	1	15,100	...	15,100	15,100	249	3·14	3·14	3·14	...
	Dholkot	1	4,826	...	4,826	4,826	399	15·87	15·87	15·87	...
	Total	...	313,534	11,180	302,354	294,924	34,190	20·93	21·71	22·25	0·03566
						Dholkhand	129				
Jaunsar.	Kalsi	7	15,634	532	15,102	15,017	330	4·05	4·19	4·22	0·03403
	Cantonment Blocks	5	2,805	14	2,791	2,772	175	11·98	12·04	12·13	0·005
	Rawai and Jaunpur	6	17,280	214	17,066	16,466	137	1·52	1·54	2·11	0·01232
	Lokandi	7	34,336	19	34,317	34,279	650	3·58	3·59	3·60	0·00055
	Deoban	5	28,875	123	28,752	28,645	594	3·94	3·97	3·98	0·0043
	Ekra-konain	6	59,137	521	58,616	58,571	813	2·64	2·66	2·66	0·0088
	Bawar	8	91,572	1,131	90,441	85,292	1,869	3·92	3·97	4·21	0·01235
	Datmir	7	16,640	50	16,590	16,590	186	2·14	2·15	2·15	0·003
	Khunigadh	8	25.901	3,965	21,936	14,994	1,390	10·30	12·16	17·80	0·15308
	Hano	2	2,520	....	2,520	2,520	108	8·31	8·31	8·31	...
	Deogarh	8	65,931	384	65,547	63,495	1,111	3·23	3·25	3·36	0·00582
	Deota	8	101,144	2,765	98,379	96,653	3,090	3·91	4·02	4·09	0·02733
	Binksar	3	150	...	150	150	12	15·36	15·36	15·36	...
	Bashahr	4	5,684	12	5,672	5,672	93	3·15	3·16	3·16	0·00209
	Total	...	467,609	9,730	457,879	441,116	10,558 0 0	4·337	4·427	4·595	0·0208
Saharanpur.	Lakarkot	6	55,490	16	55,474	55,434	5,521	19·103	19·108	19·123	0·00029
	Dholkhand	5	50,400	75	50,325	50,240	1,962	7·474	7·485	7·498	0·00149
	Chillawala	4	63,628	225	63,403	63,178	1,702	5·136	5·154	5·172	0·00353
	Kalushahid	6	6,485	754	5,731	3,585	1,484	43·93	49·72	79·48	0·11626
	Patri (plantation)	5	3,150	164	2,986	2,884	2,046	124·71	132·49	136·15	0·05206
	Dhaula	6	4,000	30	3,970	3,450	991	47·54	47·90	55·15	0·0075
	Sendhli I.	3	1,500	30	1,470	1,470	582	74·45	76·02	76·02	0·02
	Baniawala	3	1,500	...	1,500	1,500	285	36·48	36·48	36·48	...
	Lalwala	2	1,408	...	1,408	1,408	544	74·18	74·18	74·18	...
	Tira	2	750	...	750	750	213	54·85	54·85	54·85	...
	Badshahibagh	1	25,266	...	25,266	25,266	399	3·03	3·03	3·03	...
	Sendhli II.	1	2,060	...	2,060	2,060	2	0·18	0·18	0·18	...
	Mohan	1	360	...	360	360	2	1·07	1·07	1·07	...
	Total	...	215,997	1,294	214,703	211,585	15,733	13·985	14·07	14·277	0·006
	Grand Total	...	997,140	22,204	974,936	947,625	60,610	11·67	11·93	12·28	0·02227

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

NORTH-WESTERN PROVINCES AND OUDH.

SCHOOL CIRCLE.

ABSTRACT OF YEARS.

YEAR.	TOTAL NUMBER OF ACRES.				COST.	COST PER ACRE, IN PIES.			CO-EFFICIENT OF FAILURE.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1871-72	245	...	245	245	.....	...	...	...	...
1872-73	306	...	306	306	405 0 0	...	...	...	...
1873-74	3,840	...	3,840	3,840	751 14 8	...	...	...	...
1874-75	7,680	3,200	4,480	4,480	1,982 12 2	...	...	...	...
1875-76	7,680	1,370	6,310	6,310	448 4 3	...	...	...	...
1876-77	7,680	...	7,680	7,680	1,303 6 9	...	...	...	...
1877-78	36,582	...	36,582	33,299	3,041 14 10	15·966	15·966	17·539	...
1878-79	51,898	2,877	49,021	47,112	4,588 0 0	16·973	17·969	18·698	0·05544
1879-80	90,647	1,464	89,183	81,822	6,300 0 0	13·344	13·563	14·783	0·01615
1880-81	113,570	988	112,582	104,874	6,618 0 0	11·188	11·287	12·116	0·00870
1881-82	141,785	5,661	136,124	131,398	7,593 0 0	10·282	10·710	11·095	0·03993
1882-83	148,929	2,962	145,967	143,907	7,659 0 0	9·845	10·074	10·218	0·01986
1883-84	157,856	2,946	154,910	154,646	9,428 0 0	11·467	11·685	11·705	0·01866
1884-85	228,442	736	227,706	227,706	10,361 0 0	8·700	8·729	8·729	0·00322
TOTAL ...	997,140	22,204	974,936	947,625	60,480 4 8				
			Add Dholkhand ...		129 0 0				
					60,609 4 8	11·675	11·936	12·280	0·02227

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ABSTRACT OF BLOCKS.

Forest Tract.	Number of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Fillure.
		Attempted.	Failed.	Protected.	Accepted		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Hathibari	15	31,845	640	31,205	25,445	3,085 7 7	18·597	18·978	23·274	0·02009
Kantranala	1	3,548	...	3,548	3,548	496 9 5	26·870	26·870	26·870	...
Banjar Valley	10	495,867	43,822	452,045	309,301	5,937 11 0	2·299	2·522	3·686	0·08837
Motinala	10	16,586	339	16,247	15,827	541 15 3	6·243	6·404	6·576	0·02044
Jagmandal	18	526,630	13,415	513,215	415,423	21,350 8 6	7·784	7·987	9·868	0·02548
Chuharigogarh	18	40,667	1,548	39,119	29,789	5,046 4 7	23·825	24·767	32·525	0·03804
Barela	13—5	35,765	156	35,609	35,297	2,084 5 1	11·196	11·245	11·344	0·00436
Airi	7—6	12,900	140	12,760	12,215	225 6 6	3·355	3·391	3·543	0·01084
Singrampur	14	91,770	618	91,152	89,316	2,521 8 10	5·275	5·311	5·420	0·00673
Bijeragogarh	14	294,508	40	294,468	294,108	6,746 14 1	4·398	4·399	4·404	0·00013
Lower Gour	4	15,034	...	15,034	15,034	496 12 9	6·344	6·344	6·344	...
Rajaborari	10	883,605	17,743	865,862	865,292	7,760 3 4	1·686	1·721	1·722	0·02008
Saonligarh	10	637,691	27,091	610,600	587,148	5,112 4 7	1·539	1·607	1·672	0·04248
Bori	20	569,400	5,680	563,720	539,840	16,614 13 2	5·602	5·659	5·909	0·00997
Kalibhit	11	529,920	61,645	468,275	441,658	2,351 3 0	0·852	0·964	1·022	0·11633
Punasa	13—10	716,560	144,499	572,061	269,010	8,247 14 7	2·210	2·768	5·887	0·20166
Chandgarh	8	491,520	158,786	332,734	256,612	3,881 11 6	1·312	2·239	2·904	0·32305
Khandwa	8	280,320	6,103	274,217	269,547	5,333 12 10	3·656	3·738	3·803	0·02177
Bainpura	6	3,600	...	3,600	3,600	128 13 8	6·872	6·872	6·872	...
Gunjari	6	21,000	...	21,000	21,000	312 12 8	2·860	2·860	2·860	...
Undria Booria	6	18,600	18	18,582	18,572	197 14 6	2·042	2·044	2·055	0·0009
Bhojwa Baheria	6	12,000	180	11,820	11,820	248 1 8	3·97	3·97	3·97	0·015
Ajnal	6	9,000	8	8,992	8,968	198 6 4	4·232	4·236	4·247	0·0009
Chaoria	5	850	...	850	850	24 10 10	5·348	5·348	5·348	...
Bowergarh	11—10	362,560	37,674	324,886	285,430	6,611 4 10	3·501	3·907	4·447	0·10391
Khamapur	10—9	143,680	15,880	127,800	100,480	1,798 4 11	2·403	2·701	3·436	0·11052
Bhimaram	13	148,199	378	147,821	147,677	14,366 13 11	18·613	18·904	18·922	0·00255
Mirkallu	10	81,579	330	81,249	79,339	10,724 9 3	25 240	25·343	25·953	0·00404
Taroba	11	278,590	17,238	261,352	257,084	12,162 14 5	8·368	8·935	9 084	0·06888
Govardhan	11	145,574	535	145,039	144,482	6,577 13 1	8·675	8·707	8·741	0·00367
Pipalkhota	4	5,120	...	5,120	5,120	20 15 0	0·785	0·785	0·785	...
Korai Block	16	409,450	17,310	392,140	343,100	9,787 13 8	4·590	4·792	5·477	0·04228
„ Sakata	6	60,120	...	60,120	60,120	1,024 0 0	17·012	17·012	17·012	...
East Pench	10	424,760	13,520	411,240	367,240	6,613 8 3	2·989	3·088	3·458	0·03183
Nagalwari	8	72,880	155	72,725	72,570	1,278 4 0	3·367	3·374	3·396	0·00213
Paraspani	7	53,120	90	53,030	53,030	563 4 3	2·036	2·039	2·039	0·00169
Narhar	5	195,200	2,000	193,200	191,200	2,188 14 0	2·153	2·175	2·197	0·01024
Garhakota	11	31,889	132	31,757	30,619	144 5 10	0·869	0·873	0·905	2 00414
Hath-ko	11	106,726	9,296	97,430	87,634	2,799 7 9	5·036	5·517	6·133	0·08710
Rangir	10	26,883	7,103	19,780	19,150	250 10 4	1·790	2·433	2·513	0·26422
Ranipura	7	19,040	...	19,040	19,040	463 12 3	4·676	4·676	4·676	...
Tigora	5	2,295	...	2,295	2,295	17 3 0	1·438	1·438	1·438	...
Dhuga Erjhar	6	156,492	26,886	129,606	115,363	2,366 14 6	2·903	3·505	3·938	0 17180
Jalandhar	5	14,425	213	14,212	13,360	305 8 3	2·735	2·777	2·953	0·01476
Pandratola	9	44,211	1,024	43,187	40,007	473 7 3	2·056	2·105	2·272	0·02316
Total ...	...	8,521,979	632,235	7,889,744	6,973,560	179,490 14 2	4·044	4·37	4·94	0·07419

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

CENTRAL PROVINCES.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.				Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.					Attempted.	Protected.	Accepted.	
					Rs.	*a.*	*p.*					
1865-66	23,680	...	23,680	22,080	847	11	8		6·873	6·873	7·371	...
1866-67	23,680	...	23,680	22,080	847	11	8		6·873	6·873	7·371	...
1867-68	62,080	...	62,080	46,636	4,595	8	5		14·155	14·155	18·842	...
1868-69	62,080	...	62,080	46,636	4,595	8	5		14·155	14·155	18·842	...
1869-70	63,320	...	63,320	47,876	5,596	6	5		16·969	16·969	22·443	...
1870-71	65,443	...	65,443	49,359	5,671	11	5		16·640	16·640	21·859	...
1871-72	92,478	...	92,478	75,794	6,034	8	1		12·528	12·528	15·286	...
1872-73	128,915	...	128,915	95,991	3,970	3	3			5·913	7·941	...
1873-74	128,924	2,020	126,904	96,000	3,786	13	7		5·639	5·729	7·574	0·01566
1874-75	174,357	25,718	148,639	122,785	5,763	6	0		6·346	7·445	9·012	0·14750
1875-76	383,419	37,823	345,596	255,302	10,812	10	10		5·412	6·007	8·131	0·09864
1876-77	505,918	12,344	493,574	368,939	14,338	2	9		5·441	5·577	7·462	0·02439
1877-78	691,609	123,458	568,15 1	456,859	10,567	9	4		2·934	3·571	4·441	0·17850
1878-79	736,468	54,595	681,873	553,354	11,107	11	4		2·895	3·128	3·854	0·07413
1879-80	829,351	112,825	716,526	626,850	12,462	11	7		2·862	3·312	3·786	0·13604
1880-81	896,642	53,650	842,992	744,258	13,416	14	5		2·873	3·056	3·461	0·05983
1881-82	910,602	127,141	783,461	749,022	13,750	10	3		2·921	3·370	3·524	0·13962
1882-83	910,659	20,076	890,583	842,903	15,571	13	1		3·283	3·357	3·547	0·02204
1883-84	914,403	39,995	874,408	855,475	17,137	9	8		3·598	3·763	3·846	0·04374
1884-85	917,951	22,590	895,361	895,361	18,615	8	0		3·852	3·950	3·950	0·02461
Total. ...	8,521,979	632,235	7,889,744	6,973,560	1,79,490	14	2		4·044	4·368	4·943	0·07419

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

PEGU CIRCLE.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.	Remarks.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.		
						Rs.					
Dawé	2	61,500	1	61,499	61,498	160	0·499	0·499	0·499	...	The figures and totals for the various blocks, especially Prome plantation, Magayee, Kyetpyugan, Myaung Minhla, and Minhla Mokka are believed to be more correct than those quoted in the Annual Reports.
Nyaulé	8	44,720	3,257	41,463	34,616	14,803	63·555	68·547	82·106	0·07282	
Bwet	9	25,974	3,790	22,184	12,805	8,864	65·523	76·717	132·908	0·14591	
Pyun Chaung	19	44,352	54	44,298	44,212	5,860	25·368	25·399	25·448	0·00122	
Kangyi	9	34,209	2,248	31,961	30,369	11,529	64·707	69·258	72·560	0·06571	
Magayee	13	25,491	1,436	24,055	23,632	21,738	163·732	173·506	176·612	0·05633	
Kyetpyugan	6	4,128	31	4,097	3,977	8,660	402·790	405·838	418·084	0·00751	
Chaungzauk and Gwégyo	7	23,106	1,209	21,897	20,141	9,179	76·273	80·484	87·501	0·05234	
Yané	9	51,840	100	51,740	51,340	3,719	13·774	13·801	13·908	0·00193	
Gwédouksan	7	1,010	8	1,002	994	551	104·744	105·581	106·430	0·00792	
Myaung Minhla	7	1,990	220	1,770	1,740	1,130	109·025	122·576	124·689	0·11055	
Thonzé Kon Bilin	7	13,172	13	13,159	13,107	840	12·244	12·256	12·305	0·00099	
Prome Plantation	10	754	4	750	744	710	182·122	183·093	184·570	0·00530	
East Swa	3	51,840	17	51,823	51,820	2,922	10·822	10·826	10·826	0·00033	
Minhla Mokka	7	12,696	1,139	11,557	9,026	1,690	25·558	28·077	35·950	0·08971	
Bawbin Chaungwa	16	10,290	601	9,689	8,150	4,387	81·856	86·934	103·350	0·05840	
Myodwin	7	280	...	280	280	660	452·571	452·571	452·571	...	
Mokka Bilin	14	227,666	20,567	207,099	175,766	16,635	14·117	15·519	18·228	0·09034	
Kabaung	1	23	...	23	23	49	409·043	409·043	409·043	...	
Myauktaung	...	...	...	...	...	785	...	...	...	...	
Total ...	...	635,041	34,695	600,346	544,240	114,871	34·730	36·737	40·525	0·05463	

Note.—Total 114,871

Deduct excess in above for Magayee and Kyetpyugan ... 1

" " " for Prome Plantation 593

594

114,277 (agrees with Total in Report for 1884-85).

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

PEGU CIRCLE.

ABSTRACT OF YEARS.

Year.	Total Number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.	Remarks.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.		
					Rs. a. p.					
1865-66	...	...	...	...	194 0 0	Distribution of expenditure during these years uncertain, but the total up to 1872-73 is correct.				Total is Rs. 201 less than it should be. The errors are Rs. 200 in Mokka Bilin and Re. 1 in Myodwin, but they are not discoverable in the Annual Reports.
1866-67	44	...	44	44	68 0 0					
1867-68	164	...	164	164	72 0 0					
1868-69	284	...	284	284	68 0 0					
1869-70	915	...	915	715	215 8 0					
1870-71	985	270	715	715	436 8 0					
1871-72	1,071	...	1,071	1,071	1,005 8 0					
1872-73	12,091	...	12,091	11,937	2,343 8 0					
1873-74	18,619	45	18,574	16,490	5,920 0 0	61·053	61·195	68·929	0·00242	
1874-75	18,825	28	18,797	16,696	4,772 0 0	48·724	48·796	54·936	0·00148	
1875-76	19,388	30	19,358	17,256	4,837 0 0	47·901	47·975	53·819	0·00155	
1876-77	32,157	1,821	30,336	25,750	16,906 0 0	100·941	107·000	126·058	0·05663	
1877-78	38,042	478	37,564	30,810	7,629 0 0	38·504	38·967	47·542	0·01256	
1878-79	41,214	1,662	39,552	33,885	8,847 0 0	41·215	42·946	50·129	0·04032	
1879-80	55,467	1,295	54,172	37,730	9,632 0 0	33·341	34·138	49·012	0·02335	
1880-81	56,378	15,520	40,858	38,556	9,045 0 0	30·804	42·504	45·012	0·27530	
1881-82	55,852	596	55,256	45,568	9,873 0 0	33·940	34·306	41·599	0·01069	
1882-83	73,332	8,359	64,973	63,073	10,697 0 0	28·007	31·610	32·563	0·11399	
1883-84	104,755	1,771	102,984	100,858	10,865 0 0	19·914	20·256	20·684	0·01690	
1884-85	105,458	2,820	102,638	102,638	10,459 0 0	19·042	19·565	19·565	0·02674	
Total ...	635,041	34,695	600,346	544,240	113,885 0 0					
			Add Myauktaung ...		785 0 0					
					114,670 0 0					
				Add errors ...	201 0 0					
					114,871 0 0	34·730	36·737	40·525	0·05463	

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c. year by year.

BURMA.

TENASSERIM CIRCLE.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs.				
Sinzwé	8	71,680	1,979	69,701	65,760	7,000	18·750	19·282	20·438	0·02712
Wamu	10	18,240	3,320	14,920	8,400	169	1·779	2·175	3·863	0·18202
Kahilu	7	8,960	1,662	7,298	1,388	245	5·250	6·445	33·890	0·18560
Méwanig	9	71,040	...	71,040	66,240	205	0·554	0·554	0·594	...
Min-nan-nwé	8	30,720	...	30,720	30,720	11	0·069	0·069	0·069	...
Oukangyi, &c.	9	108,400	27,514	80,886	58,250	786	1·392	1·866	2·591	0·25382
Mépalé West	4	89,600	18,438	71,162	62,842	4,729	10·133	12·759	14·448	0·20579
Kyun Chaung	6	62,720	686	62,034	60,243	1,907	5·837	5·902	6·078	0·01092
Dali	8	4,426	1,760	2,666	331	554	24·033	39·898	321·354	0·39765
Nat Stream	2	3,600	...	3,600	3,600	285	15·200	15·200	15·200	...
Pakabo	2	6	...	6	6	11	335·333	335·333	335·333	...
Tagé Laung	1	3,072	600	2,472	2,472	...	...	...	..	...
Total ...	...	472,464	55,959	416,505	360,252	15,902	6·462	7·330	8·475	0·11823

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BURMA.

TENASSERIM CIRCLE.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1870-71	Figures for these years rejected as being untrustworthy, or fire-protection a failure.				.....	.....	.....	.....	.....
1871-72					30 0 0	.....	.....	.....	.....
1872-73					.....	.....	.....	.....	.....
1873-74					50 12 0	.....	.....	.....	.....
1874-75					20 0 0	.....	.....	.....	.....
1875-76	1,760	.....	1,760	240	20 0 0	2·182	2·182	2·182	.....
1876-77	27,360	.....	27,360	12,400	298 15 0	2·098	2·098	2·098	.....
1877-78	45,450	14,816	30,634	24,471	468 4 0	1·978	2·935	3·715	0·32600
1878-79	32,970	1,200	31,770	24,489	968 9 0	5·640	5·853	7·594	0·03640
1879-80	43,170	929	42,241	33,959	1,298 13 6	5·776	5·903	7·343	0·02152
1880-81	39,840	3,800	36,040	33,918	1,533 12 8	7·392	8·171	8·682	0·09539
1881-82	60,120	1,310	58,810	46,511	1,409 0 0	4·499	4·600	5·816	0·02179
1882-83	61,914	11,674	50,240	47,730	1,793 0 0	5·560	6·852	7·213	0·18855
1883-84	78,452	14,432	64,020	62,844	3,106 0 0	7·601	9·315	9·489	0·18396
1884-85	81,428	7,798	73,630	73,630	4,905 0 0	11·566	12·789	12·789	0·09577
Total	472,464	55,959	416,505	360,252	15,902 4 2	6·462	7·330	8·475	0·11823

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ASSAM.

ABSTRACT OF BLOCKS.

Forest Tract.	No. of Years under Protection.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
		Attempted.	Failed.	Protected.	Accepted.		Attempted	Protected.	Accepted.	
						Rs. a. p.				
Sidli (with Chirang)	9	320,067	112,750	207,317	110,602	10,057 14 3	6·034	9·315	17·660	0·35227
Guma	7	110,438	58,330	52,108	19,276	8,652 14 6	15·043	31·833	86·188	0·52817
Panbari	5	7,440	940	6,500	6,350	403 8 0	10·413	11·919	12·200	0·12634
Barduar	12	165,660	2,000	163,660	142,800	6,356 6 0	7·367	7·457	8·547	0·01207
Pautan	12	98,012	8,810	89,202	60,362	3,145 5 0	6·161	6·792	10·005	0·08989
Mataikhar	12	24,240	380	23,860	20,220	2,708 12 9	21·456	21·797	25·721	0·01567
Kulsi	11	35,414	4,690	30,724	10,458	5,298 6 5	28·726	33·111	97·274	0·13243
Jara	11	10,885	...	10,885	9,020	1,646 1 0	29·035	29·035	35·038	...
Milmillia	6	12,705	1,255	11,450	11,420	1,660 6 3	25·092	27·842	27·915	0·09878
Mayang	3	14,400	100	14,300	13,400	116 0 0	1·547	1·557	1·662	0·00694
Rani	3	30,000	7,600	22,400	16,400	368 0 0	2·355	3·154	4·308	0·25333
Kawa Sing	3	10,010	200	9,810	9,180	340 0 0	6·521	6·654	7·111	0·01998
Singra	3	15,000	3,672	11,328	4,719	105 0 0	1·344	1·779	4·272	0·24480
Balipara	12	40,511	1,351	39,160	36,470	4,071 12 6	19·298	19·964	21·436	0·03335
Garumari	5	900	...	900	900	481 6 6	102·700	102·700	102·700	...
Charduar...	7	5,109	150	4,959	4,959	316 0 0	11·871	12·234	12·234	0·02938
Bamoni Hill	7	57	...	57	56	195 0 0	640·000	640·000	651·429	...
Hajo	...	...	...	...	...	57 0 0	...	.....	...	...
Khaling Duar	2	26,424	336	26,088	25,784	10 0 0	0·073	0·074	0 075	0·01272
Kholahat	10	19,032	136	18,896	18,444	1,823 11 0	18·393	18·520	18·984	0·00714
Devoka	10	4,678	3	4,675	4,411	1,197 0 0	49·128	49·160	52·102	0·00064
Diju or Saloni	6	16,516	262	16,254	15,440	1,052 0 0	12·229	12·427	13·082	0·01586
Shillong and Riat Khwan	11	40,980	2,058	38,922	29,693	11,458 10 4	53·686	56·525	74·093	0·05022
Total ...	...	1,008,478	205,023	803,455	570,364	61,521 2 6	11·713	14·701	20·710	0·20309

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

ASSAM.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1873-74	10,560	...	10,560	8,360	92 7 0	1·680	1·680	2·123	...
1874-75	32,150	...	32,150	19,110	1,203 4 0	7·186	7·186	12·089	...
1875-76	36,319	2,115	34,204	21,424	1,399 8 9	7·396	7·856	12·543	0·05823
1876-77	65,366	7,530	57,836	24,148	3,790 6 1	11·427	12·915	31·015	0·11520
1877-78	72,512	13,954	58,558	26,248	3,793 0 8	10·308	12·764	28·477	0·19243
1878-79	88,872	55,683	33,189	26,979	4,141 0 0	8·946	23·956	29·466	0·62655
1879-80	92,425	490	91,935	51,762	6,216 0 0	12·913	12·981	23·057	0·00530
1880-81	104,325	1,385	102,940	52,092	6,053 8 0	11·141	11·291	22·312	0·01328
1881-82	105,212	42,785	62,427	52,449	6,144 0 0	11·212	18·896	22·491	0·40665
1882-83	132,700	35,049	97,651	70,663	8,900 0 0	12·877	17·499	24·182	0·26412
1883-84	134,039	39,125	94,914	90,038	9,486 0 0	13·588	19·189	20·228	0·29189
1884-85	133,998	6,907	127,091	127,091	10,302 0 0	14·761	15·563	15·563	0·05154
Total ...	1,008,478	205,023	803,455	570,364	61,521 2 6	11·713	14·701	20·710	0·20309

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BERAR.

ABSTRACT OF BLOCKS.

FOREST TRACT.	No. OF YEARS UNDER PROTECTION.	TOTAL NUMBER OF ACRES.				COST.	COST PER ACRE, IN PIES.			CO-EFFICIENT OF FAILURE.
		Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
						Rs. a. p.				
Raipur Block	16	262,479	4,960	257,519	227,696	6,651	4·865	4·958	5·608	0 01889
Remainder of Bairagarh	14	3,506,462	165,226	3,341,236	3,295,342	8,841	0·462	0·482	0·492	0·04709
Gugumal	12	1,446,840	62,431	1,384,409	1,166,812	3,973	0·527	0·551	0·654	0·04315
Chikalda	...	...	...	...	...	78	1·248	1·248	1·248	...
Amraoti Hills	5	71,438	7,027	64,411	61,292	1,849	4·97	5·511	5·792	0·09836
Gurumatergaon	12	512,256	41,933	470,323	437,900	4,017	1·505	1·639	1·761	0·08186
Ghatbori	10	260,478	72,154	188,324	165,672	2,823	2 08	2·878	3·270	0·27700
Penganga	10	116,490	19,249	97,241	73,590	1,996	3·29	3·941	5·208	0·16524
Loni and Bhongaon	4	9,107	2	9,105	9,100	5	0·105	0·105	0·105	0·0002
Rui	4	26,519	2,180	24,339	21,728	337	2·44	2·66	2·977	0·0822
Amdari	2	27,434	66	27,368	27,368	448	3·135	3·143	3·143	0·0024
Kinwat	10	532,378	104,256	428,122	301,980	4,728	1·704	2·12	3·003	0·19583
Kelapur	5	194,180	84,893	109,287	79,214	2,144	2 12	3·76	5·19	0·4372
Darwha	4	159,255	14,071	145,184	137,294	2,878	3·469	3·806	4·025	0·08835
Wún	3	31,475	13,354	18,121	11,829	395	2·49	4·185	6·411	0·42745
Gahuli	1	9,507	...	9,507	9,507	82	1·65	1·65	1·65	...
District Forests	...	...	...	...	...	122	...	...	...	...
TOTAL ...	...	7,166,298	591,802	6,574,496	6,026,324	40,967	1·097	1·193	1·305	0 08258

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

BERAR.

ABSTRACT OF YEARS.

Year.	Total number of Acres.				Cost.	Cost per acre, in pies.			Co-efficient of Failure.
	Attempted.	Failed.	Protected.	Accepted.		Attempted.	Protected.	Accepted.	
					Rs. a. p.				
1869-70	19,200	.....	19,200	14,231	.....	.....	.....	.....	.....
1870-71	19,200	.....	19,200	14,231	647 14 3	6·48	6·48	8·74	.....
1871-72	256,000	123,360	132,640	132,631	402 1 8	0·302	0·582	0·582	0·48
1872-73	256,000	30,080	225,920	220,951	1,001 3 2	0·814	0·850	0·87	0·1175
1873-74	321,200	.....	321,200	303,431	686 8 7	0·41	0·41	0·434	.....
1874-75	343,040	34,188	308,852	303,883	1,206 1 0	0·675	0·750	0·762	0·09966
1875-76	469,800	58,080	411,720	367,267	1,561 1 7	0·425	0·485	0·537	0·1236
1876-77	600,109	9,167	590,942	431,517	1,920 14 0	0·615	0·624	0·855	0·015
1877-78	601,937	69,120	532,817	431,517	2,884 0 0	0·92	1·04	1·28	0·1148
1878-79	600,497	45,460	555,037	431,517	2,993 0 0	0·956	1·035	1·33	0·0757
1879-80	522,892	64,640	458,452	448,882	3,172 0 0	1·165	1·329	1·332	0·12362
1880-81	562,272	8,994	553,278	522,499	3,129 0 0	1·069	1·086	1·150	0·01600
1881-82	596,904	46,373	550,531	540,665	4,671 0 0	1·502	1·629	1·657	0·07769
1882-83	659,489	39,249	620,240	595,754	5,067 0 0	1·475	1·621	1·633	0·05951
1883-84	668,333	48,411	619,922	612,603	6,443 0 0	1·851	1·995	2·019	0·07244
1884-85	669,425	14,680	654,745	654,745	5,059 0 0	1·451	1·483	1·483	0·02193
Total ...	7,166,298	591,802	6,574,496	6,026,324	40,843 12 3	1·097	1·193	1·305	0·08258
				And District Forests ...	122 0 0				
					40,965 12 3				

These figures do not represent the areas annually attempted, &c., but the sums of the various areas attempted, &c., year by year.

APPENDIX B.

Fire-Protection in Kheri (Trans-Sarda), Oudh.

Number of Compartment.	Area of Compartment, in acres.	Years.												
		1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
19	506	0 0	*b*	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20	2,054	0 0	*b*	0 0	0 0	0 0	0 0	*b*	0 0	0 0	0 0	0 0	0 0	0 0
21,	838	0 0	*b*	0 0	0 0	0 0	0 0	*p b*	0 0	0 0	*b*	0 0	*b*	0 0
25	1,114	0 0	*b*	0 0	0 0	0 0	0 0	0 0	500*b*	0 0	0 0	0 0	0 0	0 0
26	1,165	0 0	*b*	0 0	0 0	0 0	0 0	*b*	0 0	0 0	0 0	0 0	0 0	0 0
27	973	0 0	*b*	0 0	0 0	0 0	0 0	*b*	0 0	0 0	*b*	0 0	0 0	0 0
30	269	0 0	*b*	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
31	237	0 0	*b*	0 0	0 0	0 0	0 0	*p b*	0 0	0 0	0 0	0 0	0 0	0 0
32	365	0 0	*b*	0 0	0 0	20*b*	0 0	*b*	0 0	0 0	0 0	0 0	0 0	0 0
22	1,926	...	...	...	...	0 0	640*b*	*b*	0 0	0 0	*b*	0 0	*b*	0 0
28	320	...	...	...	...	0 0	0 0	*b*	0 0	0 0	*b*	0 0	0 0	0 0
29	1,574	...	...	...	...	...	...	...	0 0	0 0	..	0 0	0 0	0 0
33	1,306	...	...	...	...	...	...	...	0 0	0 0	*b*	0 0	0 0	0 0
37	307	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0	0 0
38	416	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0	0 0
39	1,817	...	...	...	...	...	...	...	0 0	0 0	*b*	0 0	0 0	0 0
40	832	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0	0 0
41	685	...	...	...	...	...	...	...	0 0	0 0	*b*	0 0	0 0	0 0
42	1,190	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0	0 0
43	1,395	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0	0 0
48	3,091	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
49	307	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
50	2,195	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
53	3,076	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
54	1,875	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
55	2,080	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
57	1,754	...	...	...	...	...	...	...	...	0 0	*b*	0 0	0 0	0 0
58	678	...	...	...	...	...	...	...	...	0 0	*b*	0 0	0 0	0 0
61	2,372	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
62	3,360	...	...	...	...	...	...	...	...	0 0	0 0	0 0	*b*	0 0
15	915	...	...	...	...	...	...	...	...	0 0	0 0	0 0	0 0	0 0
16	832	...	...	...	...	...	...	...	...	0 0	*b*	0 0	0 0	0 0
17	1,158	...	...	...	...	...	...	...	...	0 0	*b*	0 0	*b*	0 0

00 = Successfully protected.
b = Wholly burnt.
640*b* = 640 acres burnt.
The year 1873 means the year reported as in 1872-73 up to the rains of 1873.

Govt. C. B. Press, Simla.—Nos. 346 & 572 H. D.—9-8-86.—500.

REVIEW

OF

FOREST ADMINISTRATION

IN

BRITISH INDIA

FOR THE YEAR

1885-86.

BY

B. RIBBENTROP,

OFFICIATING INSPECTOR GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

H H-K-4

SIMLA:

PRINTED AT THE GOVERNMENT CENTRAL PRESS.

1887.

SIMLA : PRINTED BY THE SUPERINTENDENT,

GOVERNMENT CENTRAL PRESS.

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CHAPTER I.

Area and Boundaries.

AREA.

General.

The following table exhibits the Forest Areas, the property of Government, which were partially or entirely under the management and control of the Forest Department on the 1st April 1886 :—

Province.		Forest area, in square miles.				Proportion of Forests to whole Area of Province.	Remarks.
Name.	Area, in square miles.	Reserved Forests.	Protected Forests.	Unclassed Forests.	Total.		
Bengal	150,589	4,972	2,219	4,033	11,224	7	
N.-W. Provinces and Oudh	106,080	3,390	73	144	3,607	3	
Punjab	106,772	1,068	321	2,709	4,098	4	
Central Provinces ...	84,445	19,434*	...	404	19,838	23	* 3,505 square miles are 1st class Reserves; the rest 2nd class.
Burma	87,220	4,471†	...	...	4,471	5	†422 square miles are *taungya* areas.
Assam	45,838	2,332	863	6,392	9,587	21	
Coorg	1,583	239	...	...	239	15	
Ajmere	2,711	144	...	...	144	5	
Baluchistan	...	...	...	8	8	...	
Total ...	585,238	36,050	3,476	13,690	53,216	9	
Berar	17,711	1,546	...	2,796	4,342	25	
Total Bengal Presidency	602,949	37,596	3,476	16,486	57,558	10	
Madras	141,028	2,737	7,060‡	1,126	10,923	8	‡ "Reserved *Lands*."
Bombay	124,300	9,505	4,427	...	13,932	11	
Grand Total ...	868,277	49,838	14,963	17,612	82,413	9	

2. It will be seen, from a comparison of the above table with the similar statement of the previous year, that the total area of forests under the control of the Forest Department has increased in the Provinces under the Government of India and in Berar by 89 square miles, and in the Madras Presidency by 1,903 square miles, and has decreased in the Bombay Presidency by 13 square miles. The following table shows the changes that have taken place in each

Province during the year in the constitution of forest property under Forest Departmental control:—

Province.	Area, in square miles.					
	Reserved Forests.		Protected Forests.		Total.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Bengal	90	...	...	79	11	...
North-Western Provinces and Oudh...	...	...	...	26	...	26
Punjab	53	...	10	...	63	...
Central Provinces	...	6	...	...	...	6
Burma	529	...	...	...	529	...
Assam	...	10	...	...	...	10
Coorg	1	...	...	...	1	...
Total ...	657	...	...	95	562	...
Berar	2	...	...	...	2	...
Total Bengal Presidency ...	659	...	...	95	564	...
Madras	...	242	2,176	...	1,934	...
Bombay	208	...	...	221	...	13
Grand Total ...	625	...	1,860	...	2,485	...

The changes in the areas of Reserved and Protected Forests, exhibited in the above table, are the results of Forest Settlements, and the consequent transfer of one class of forests to another.

3. The respective rights of Government and private persons in and over any forests are finally settled only by the constitution of such property as Reserves under the Forest Law in force.

The following table shows the proportions which the areas thus finally settled by the end of the year under report bear to the total area of each Province:—

Province.	Proportion of Reserved Forest Area.
	Per cent.
Bengal	3
North-Western Provinces and Oudh	3
Punjab	1
Central Provinces	23
Burma	5
Assam	5
Coorg	15
Ajmere	5
Berar	9
Madras	2
Bombay	8

4. It seems obvious that the proportion shown to exist in the foregoing paragraph is, in most Provinces, by far too insignificant to supply the country at large with the forest produce needed. No doubt other sources are at present available, including, in some cases, more or less extensive private forests; but no reliance can be placed on their permanency, and even the State forests cannot be worked under pre-considerded systematic working-plans, which are the only means of insuring the largest possible outturn of forest produce, until the extent of the proprietary rights of the State, and that of adverse rights, has been finally settled. Under an irregular and more or less uncontrolled utilization of the forests, their yield is naturally less than their potential capability, and the general tax-payer suffers to a constantly progressive extent in consequence of an unrestricted and increasing use of the State forest property by people whom accident has placed in the vicinity thereof.

The indirect benefits derived from a regularly managed forest property become daily more evident in this country, which, at the same time, is not wanting in examples of the incalculable damage done by the careless and ruthless destruction of forests. In these circumstances, it would appear to be the duty of the Government to place, in the first instance, the forest property of the State, which in many Provinces can hardly be deemed sufficient, unaided, to provide for the direct or indirect requirements of the country, in a position allowing of the best management possible. The Forest Laws provide for this in their chapters treating of the Settlement of Forest Reserves, and the Government of India supports this policy; but the progress made in this respect in the year under report has hardly been sufficiently great to give hope of an early completion of this important question. All Local Governments have not as yet finally distinguished between Reserves, declared to be such under section 34 of the Forest Act, in which the rights of private persons have been sufficiently settled previous to such declaration, and those in which such rights still require a further settlement.

5. Some changes have taken place in the areas of Reserves formed in forests leased from Native Rulers. The following table exhibits the area of Reserves at the end of the year under report :—

Province.	From whom leased.	Area, in square miles.
North-Western Provinces and Oudh	Tehri-Garhwal Jaghirs	9
	Raja of Tehri-Garhwal	67
	Raja of Bashahr	2
Punjab	Raja of Bashahr	171
	Raja of Chamba	178
Total Bengal Presidency ...	.....	427
Madras	Raja of Sandur	62
	Raja of Nilambur	136
Grand Total ...	.....	625

Bengal.

6. The changes in the constitution of the areas under the administration of the Forest Department are exhibited as follow :—

Class of Forests.	Area, in square miles.				Proportion of Forests to whole Area of Province (150,589 square miles).
	At the commencement of the year.	Added.	Excluded.	At the close of the year.	
					Per cent.
Reserved	4,882	110	20	4,972	3
Protected	2,298	...	79	2,219	1
Unclassed	4,313	340	620	4,033	3
Total ...	11,493	450	719	11,224	7

The increase in the area of Reserved Forests falls almost entirely to the share of the Orissa Forest Division.

The area of Reserved Forests amounts to less than 44½ per cent. of the area of forests under the control of the Forest Department, and to only 3¼ per cent. of the whole area of the Province. The further constitution of Forest Reserves is, therefore, highly desirable and in consonance with the views expressed by the Government of India. The whole area at present under the management of the Forest Department amounts to only 7 per cent. of the Province, and the importance is evident of constituting any available Government waste land, suitable for the purpose, as Reserves, under the Forest Act, to be utilized as Fuel and Fodder Reserves.

North-Western Provinces and Oudh.

7. The changes that have taken place during the year under review in the areas of Government forest property are exhibited as follows :—

Class of Forests.	Circle.	At the commencement of the year.	Added.	Excluded.	At the close of the year.	Total for the Province.	Proportion of Forests to whole Area of Province (106,080 *square* miles).
		Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.	Per cent.
Reserved ...	Central ...	1,471	...	...	1,471	3,468	3·27
	Oudh ...	1,194	1·54	1·54	1,194		
	School ...	764	39	...	803		
Protected ...	Central ...	99	...	26	73	73	·07
	Oudh ...	17	...	17	...		
	School ...	...	...	...	...		
Unclassed ...	Central ...	118	26	...	144	144	·13
	Oudh ...	...	...	...	...		
	School ...	...	...	...	...		
	Total ...	3,663	66·54	44·54	3,685	3,685	3·47

The principal changes which took place during the year were due to the transfer of Protected and Unclassed Forests to that of Reserves.

Almost all the forest lands in this Province have been constituted Reserves, but they were declared to be reserved under section 34 of the Forest Act, and the Government has still, in many instances, to decide whether a sufficient enquiry into the existence of adverse rights took place previous to such declaration, or whether a further Settlement is itself required. At present a certain number of villages in the vicinity of the Reserves is supplied with forest produce free, or at reduced rates, under executive orders. There is an uncertainty about this arrangement which is advantageous to neither the State nor the claimants to forest produce.

The question of forming Reserves in the *usar* and ravine portions of the Province for the supply of fuel and fodder has been under consideration from time to time. It has been proved, by various experiments, that the fodder supply of the country can be considerably increased, by a judicious planting up of these areas and a conservative use of the resources of these lands, which are now unproductive.

Punjab.

8. The following is an abstract of the progress made during the year under review in the constitution of Reserved and Protected Forests :—

Class of Forests.	At the commencement of the year.	Added	Excluded.	At the close of the year.	Percentage of Forests to whole Area of Province (106,772 square miles).
	Sq. miles.	Sq. miles.	Sq. miles.	Sq. miles.	
Reserved	1,015	67	14	1,068	1
Protected	311	28	18	321	0·3
Unclassed	2,908	558	757	2,709	3
Total ...	4,234	653	789	4,098	4
Area of Reserved Forests formed under *Leases*.	376	1	28	349	0·3
Grand Total ...	4,610	654	817	4,447	4

The area of Reserves in the Punjab amounts to only 1 per cent. of the area of the Province. It is true that the plains of this Province are less favourable to the spontaneous growth of forest than most other parts of India ; but it is a question, which is worthy of earnest attention, and one which is believed to have come under the consideration of the Provincial authorities, whether irrigation could not be made to conduce to the increase of the forest area, which is so seriously below the percentage now universally acknowledged as requisite for the security of an agricultural country. The forests declared to be reserved under section 34 of the Act require no new settlement, as a sufficient enquiry into the proprietary and adverse rights had taken place previous to the declaration.

Central Provinces.

9. The changes in the areas under the Forest Department during the year under review were as follow :—

Class of Forests.	At the commencement of the year.	Added.	Excluded	At the close of the year	Proportion of Forests to whole Area of Province (84,445 sq. ms.).
	Sq. miles	Sq. miles.	Sq. miles.	Sq. miles.	Per cent.
1st class Reserves	3,505	...	...	3,505	4
2nd „ „	15,935	1	7	15,929	19
Total Reserves ...	19,440	1	7	19,434	23
Unclassed Forests	404	...	...	404	...
Grand Total ...	19,844	1	7	19,838	23

With some inconsiderable exceptions, the whole of the State Forests in the Central Provinces have been constituted Reserves under the Act. They were declared to be reserved under section 34 of the Forest Act, but they are free of adverse rights, and no further settlement is required.

Burma.

10. The history of the year's reservation is shown in the following table :—

	Forest area.	Taungya area.	Total.
	Sq. ms.	Sq. ms.	Sq. ms.
Reserved on 1st April 1885	3,528	414	3,942
Added during the year by new reservations ...	550	...	550
	4,078	414	4,492
Excluded by disforestations	16	...	16
	4,062	414	4,476
Survey corrections	—13	+8	—5
Total on 1st March 1886 ...	4,049	422	4,471

The area of Reserves amounts as yet to only 5 per cent. of the total area of the Province, and will require to be largely increased before it is of sufficient extent to safeguard the future wants of the country. No present necessity exists for a Forest Settlement comprising at large all the more distant portions of the Arakan hills, or those forest tracts situated on the water-sheds of the Salween and its tributaries. The time may come when this, too, is advisable, but the existing method of selecting year by year the most valuable or exposed portion of the forests suffices for the present. Five hundred and thirty-four square miles were constituted Reserves during the year under report, and the reservation of tracts aggregating 500 square miles was under consideration when the year closed.

The areas of Reserves are distributed between the two Circles as follows :—

Circle.	Forest area.	Taungya area.	Total.
	Sq. ms.	Sq. ms.	Sq. ms.
Pegu	2,885	410	3,295
Tenasserim	1,164	12	1,176
Total ...	4,049	422	4,471

Assam.

11. No rights have been declared to exist in the forests which were declared Reserves under section 34 of the Act.

The changes which took place during the year under review in the constitution of the State forest property are exhibited in the following table :—

Class of Forests.	Area, in square miles.				Proportion of Forests to whole Area of Province (45,838 square miles).
	At the commencement of the year.	Added.	Excluded.	At the close of the year.	
					Per cent.
Reserved	2,342	19	29	2,339	5
Protected	863	...	...	863	2
Unclassed	6,390	85	83	6,392	14
Total ...	9,595	104	112	9,587	21

The area of Reserves amounts as yet to only 5 per cent. of the country. Under present circumstances this might be sufficient, but the time is rapidly approaching when the Province will be opened out by railways, and will be much more extensively cultivated than it is now. It is consequently essential that the area of Reserves should be largely increased in order to meet future requirements, even though it may not be possible to secure the areas without admitting adverse rights over the property.

Coorg.

12. The area of State Forests has been increased by one square mile.

Ajmere.

13. No further changes have taken place in the area of the Government Forest Reserves. This was expected; and as the area is considered insufficient to provide for the permanent requirements of the population, proposals were made to augment it by the constitution of Village Forests. During 1884-85 some 33,000 acres of waste land were taken up as Village Forests. It was the intention to place these forests under a special Regulation, and to administer them for the benefit and profit of the population. The Regulation has not as yet been adopted, and the attempts made to protect the area without rules which can be legally enforced have failed.

Baluchistan.

14. A Forest Law for Baluchistan, providing for the constitution of permanent forest estates, received the sanction of the Government of India during the year under report; but as yet no forest areas have been reserved under its clauses, and the permanency of a supply of forest produce, which, as regards fuel at least, is a question of the greatest importance in Baluchistan, is no securer now than it was the day the province was annexed.

Andamans.

15. There are no Reserves formed as yet in the Andamans, and the forests have not as yet been sufficiently examined to decide the position and areas of permanent forest estates.

Berar.

16. The changes which took place during the year in the constitution of the forest areas under the control of the Forest Department are unimportant. Two square miles were added to the area of Reserved Forests, nine square miles of lands thrown up by cultivators were added to the Unclassed Forests, and 33 square miles of this latter class were given over for purposes of cultivation.

Madras.

17. The subjoined table indicates in detail the nature of the changes effected during the year in the areas and constitution of State Forests :—

Class of Forests.	Area on 31st March 1885.	Added during the year.	Excluded during the year.	Difference.	Area on 31st March 1886.	Source or cause of increase and decrease.
	Sq. ms.	Sq. ms.	Sq. ms.	Sq. ms.	Sq. ms.	
I.—SOUTHERN CIRCLE.						
A.—Reserved Forests under Act V.	1,113	413.	...	+413	1,526	306 square miles from B; 84 square miles from D; 23 square miles from F.
B.—Reserved Forests under previous rules.	1,040	3	736	—733	307	306 square miles to A; 430 square miles to D; 3 square miles from F.
C.—Leased Forests ...	...	...	...	...	...	...
D.—Reserved Lands ...	1,291	2,336	124	+2,212	3,503	430 square miles from B; 365 square miles from E; 1,541 square miles from F; 40 square miles to rectification of areas; 84 square miles to A.
E.—Other Forests ...	1,156	335	365	—30	1,126	335 square miles from F; 365 square miles to D.
F.—Unclassed Forests and Waste Lands.	...	...	...	...	...	335 square miles to E; 1,541 square miles to D; 3 square miles to B; 23 square miles to A.
Total ...	4,600	3,087	1,225	+1,862	6,462	
II.—NORTHERN CIRCLE.						
A.—Reserved Forests under Act V.	7	96	1	+95	102	17 square miles from B; 40 square miles from D; 1 square mile to rectification of area; 39 square miles from F.
B.—Reserved Forests under previous rules.	819	...	17	—17	802	17 square miles to A.
C.—Leased Forests ...	262	...	64	—64	198	64 square miles to rectification of area.
D.—Reserved Lands ...	3,593	4	40	—36	3,557	40 square miles to A; 4 square miles from F.
E.—Other Forests ...	...	...	...	...	...	...
F.—Unclassed Forests and Waste Lands.	...	...	...	...	...	39 square miles to A; 4 square miles to D.
Total ...	4,681	100	122	—22	4,659	
GRAND TOTAL ...	9,281	3,187	1,347	+1,840	11,121	

Owing to defective information in the Report of the Northern Circle, it is possible that the explanation given above of the additions and reductions in area for that Circle are not altogether correct.

The constitution of Forest Reserves is as yet in a very backward state, only 1,628 square miles having been declared Reserved Forests under the Forest Act at the end of the year under report, which amounts to only 1·15 per cent. of the whole area of the Presidency. The present programme submitted by the Board of Revenue contemplates the final reservation of 9,950 square miles. This represents only 7 per cent. of the total area of the Presidency, and can hardly be deemed a sufficient proportion, particularly in Madras, where climatic and other conditions would appear to demand a more liberal provision of woodland than is necessary in other parts of the Empire. The area of unoccupied forests in waste lands in that Presidency has been computed to aggregate upwards of 50,000 square miles, and it would be advisable to place all extensive tracts of waste-land and forests in every District, which are not required for purposes of cultivation—or which, in view of the insufficient area of pasture lands available outside the forests that have been set aside for the special purpose of supplying timber and fuel, it will be better policy to preserve for the grazing requirements of the people—under chapter II of the Forest Act, so that they can be permanently managed in a systematic, and therefore the most profitable, manner for the State, whether for the supply of timber, fuel, or fodder.

Bombay.

18. The changes which took place during the year under review in the constitution of State forest property under the control of the Forest Department are reported as—

Class of Forests.	Area, in square Miles.				Proportion of Forests to whole area of Presidency (124,300 square miles).
	At the commencement of the year.	Added.	Excluded.	At the close of the year.	
					Per cent.
Reserved	9,297	410	202	9,505	8
Protected	4,648	170	391	4,427	3
Total ...	13,945	580	593	13,932	11

The progress which has been made in the reservation of State forest property in the Bombay Presidency is satisfactory. The Reserves, it is true, amount, as yet, to only 8 per cent. of the total area of the Presidency, but the area of Protected Forests at the disposal of the State permits of a further increase; and this point should not be lost sight of till the whole forest property of the State, amounting to 11 per cent. only of the total area of the Presidency, has been finally settled.

The distribution of State forest property amongst the different Districts of the Presidency is not so satisfactory as might be desired; and some of the high-lying lands to the east of the Ghâts, which, as regards the climatic benefit derivable from well conserved forests, would derive the greatest advantage, are exactly those in which the State possesses the smallest forest area.

At the close of the year under review, the Reserved and Protected Forests were distributed over the three Circles of the Presidency in the following proportion:—

Circle.	Reserved Forests.	Protected Forests.	Total.
	Sq. ms.	Sq. ms.	Sq. ms.
Northern	7,016	1,013	8,029
Southern	1,816	3,414	5,230
Sind	673	...	673
Total ...	9,505	4,427	13,932

BOUNDARIES.

19. The importance of distinct and permanent boundaries of the Government Forest Estates is universally acknowledged, and sufficient attention is being bestowed on this question in all parts of India.

CHAPTER II.

Surveys and Working-Plans.

SURVEYS.

Forest Survey Branch.

20. The chief operations of the Forest Survey Branch during the year were in Berar and in Bashahr (Punjab). Besides this, small parties were engaged on boundary surveys in Kumaun, Saharanpur, and Garhwal (North-Western Provinces). The area plane-tabled aggregated 607 square miles, exclusive of 72 linear miles (boundary surveys). Of the area topographically surveyed, 366 square miles were surveyed on the 4-inch scale and 241 square miles on the 2-inch scale. Preliminary triangulation was also sufficiently advanced for the detail surveys of the ensuing year, extending, as it did, over 849 square miles. The area plane-tabled was thus nearly 200 square miles in excess of that of the previous year. On the other hand, the cost was considerably less than hitherto, it being estimated at Rs. 69 per square mile for the 4-inch survey and Rs. 49 for the 2-inch survey, against Rs. 78 and Rs. 57 for the same class of work during the previous year. Altogether, the work done by the Forest Survey Branch during the year under review was very satisfactory.

Bengal.

21. In Bengal, boundary surveys were executed in most Districts; that conducted by the Forest Survey Branch in the Singbhum Sub-Division being the most important, covering as it did about 450 miles of inner and outer boundaries. The demarcation of the boundary separating the Angul Reserves from the bordering States is a matter requiring early attention, and it has been proposed that the party engaged on cadastral work in that locality could be employed for the purpose.

The extent of boundary surveyed is, except in the case of Singbhum, nowhere furnished.

Punjab.

22. The survey of the more important Bashahr forests was commenced by the Forest Survey Branch; 114 square miles were plane-tabled, and 404 square miles triangulated.

The Kalesar forest in the Phillour Division was surveyed on the 4-inch scale by the Forest Survey Branch, assisted by students from the Dehra Forest School.

In the Lahore Division a chain and compass survey was made of the Changa Manga Reserve, including plantation (area = 30 square miles).

In Chamba, 17 forests, aggregating 15 square miles, together with the lands in their immediate vicinity, were surveyed on the 2-inch scale by the Working-Plans Officer, assisted by two sub-surveyors from the Forest Survey Branch.

Burma.

23. In Burma, the area surveyed by the Topographical Survey Party was 199 square miles on the 4-inch scale and 131 square miles on the 2-inch scale, against 315 square miles on the former and 37 square miles on the latter scale during the previous year. The decrease in area, as well as the much higher cost of the work, is attributed to the very unsettled state of the country, which resulted in six weeks of the working season being lost. But for this circumstance, the proposed programme would, it is urged, have been exceeded.

Assam.

24. Leaving out of consideration numerous boundary and other minor survey operations, the principal work consisted in surveying the Dambu Reserve,

of about 7 square miles in extent. This was performed by the Divisional Officer, with the aid of Natives trained by himself. It is not stated what the scale of this detailed survey was; but the cost, amounting to Rs. 177 per square mile, was very considerable.

Berar.

25. In Berar, 162 square miles of the Melghat Forests were plane-tabled by the Forest Survey Branch, and 410 square miles were triangulated. The work is here not confined to the survey of forest property, but includes the cadastral survey of the whole country, which is in conformity with a special arrangement made with the local authorities, who pay for a portion of the survey from local revenues.

Madras.

26. In the Northern Circle, arrangements were made with the Survey Department for a better supply of forest maps, and the Reserved and Village Forests of the Nilgiris were all carefully entered on the village maps available.

In the Southern Circle, work was confined to operations of minor importance. A detailed forecast of Forest Survey work was supplied to Government, and a scheme was drawn up in accordance with it by the Madras Survey Department; but the question was still before Government at the end of the year under report.

Bombay.

27. The survey of the Thana Collectorate, on the 4-inch scale, by the Topographical Survey of India was completed, and the survey of the Panch Mahals was continued. The survey of the forests in the Belgaum Division by the Southern Maratha Topographical Survey Party was undertaken towards the end of the year. This survey is on a scale of 8 inches.

WORKING-PLANS.

General.

28. The following working-plans were completed during the year:—

Serial Number.	Province.	District.	Forest.	Area of Working Circle, in square miles.	Description of Forest.
1	Punjab ...	Chamba ...	Upper-Ravi (leased) ...	111	Deodar and Pine high-forest.
2	„ ...	„ ...	Dalhousie	7	Do. do. with Oak.
3	„ ...	Lahore ...	Shahdera-Jugian	2	Sissoo and Khair plantation.
4	„ ...	„ ...	Changa Manga	28	Do. do.
5	„ ...	Umballa ...	Kalesar	18	Sal pole-forest.
6	Burma ...	Tharawaddy ...	Kon-Bilin	25	Teak high-forest.
7	„ ...	„ ...	Kadin-Bilin	80	Do. do.
8	„ ...	„ ...	Mokka-Bilin	38	Do. do.

The whole of the above were submitted for the professional opinion of the Inspector-General of Forests, and, with the exception of Plans Nos. 5, 6, 7, 8, were approved of by him, and were recommended for adoption to the Local Governments concerned.

Those Plans to which the Inspector-General took exception—for reasons of a technical nature—were returned to the Conservators for consideration of the objections raised by the Inspector-General. Of these, Nos. 6, 7, 8, after undergoing alterations, have since been sanctioned.

29. The following working-plans were in course of preparation during the year :—

Serial Number.	Province.	District.	Forest.	Kind of Forest.
1	Bengal ...	Darjeeling ...	Darjeeling	Pine, Oak, and miscellaneous high-forest.
2	„ ...	„ ...	Bamonpokri	Sal and miscellaneous high-forest.
3	N.-W. P. & Oudh.	Kumaun ...	Ranikhet	Pine, Oak, and miscellaneous high-forest.
4	„ ...	„ ...	Naini Tal	Ditto ditto.
5	„ ...	„ ...	Nindhaur	Sal and miscellaneous high-forest.
6	„ ...	Garhwal ...	Ganges	Ditto ditto.
7	„ ...	„ ...	Tehri Garhwal (leased) ...	Deodar and Pine high-forest.
8	„ ...	Dehra-Dun ...	Dehra-Dun	Sal and miscellaneous high and pole forests.
9	„ ...	Kheri ...	Kheri	Ditto ditto.
10	Punjab ...	Chamba ...	Pangi	Deodar and Pine high-forest.
11	„ ...	Rawalpindi ...	Murree and Kahuta... ...	Oak and Pine high-forest.
12	Coorg ...	Coorg ...	Nalkeri-Hutgut	Teak and miscellaneous high-forest.
13	Berar ...	Melghat ...	Raipur	Do. do. do.
14	Bombay ...	Thana ...	Virar	Do. do. do.
15	„ ...	„ ...	Karanjgaon	Do. do. do.

Of the above, Nos. 2, 3, 4, 5, 6, 12, 13 have, in the meantime, been completed, and were submitted for the Inspector-General's opinion. They, however, belong more appropriately to the year 1886-87, in the review of which they will again be referred to.

Burma.

30. In Burma, the absence of printed maps, and the unsettled state of the country generally, put a stop during the year to all field-work connected with the preparation of working-plans.

Assam.

31. A Working-Plan Division was organized for Assam during the year too late in the season to commence operations. The Dambu Reserve, already surveyed as it has been, will be the first taken in hand in that Province for the purpose.

Madras.

32. In the Northern Circle, there are said to be but few forests which are likely to require elaborate working-plans for many years to come. This circumstance is due to the fact of these forests having, for the most part, been denuded of their mature timber. But preliminary working-plans, directed to the improvement of the general condition of even such forests as these, must be none the less necessary; and it is satisfactory to learn that plans of this type are being started in several instances, as, for example, in the case of the Nilgiri sholas, in the Mandumalai and Sandur leased forests, and in the Gumsúr sal forests. Working-plans on a somewhat more advanced pattern had been previously in operation for the Nilgiri plantations, the Nellore casuarina plantations, and the Ballopallé evergreen Fuel Reserves.

In the Southern Circle, the unsatisfactory progress of demarcation and settlement, and the absence of trustworthy maps, are said to have hitherto militated against working-plans being constructed.

CHAPTER III.

Protection and Improvement.

(I)—PROTECTION.

General.

33. The sub-joined statement compares the results of protection for the present and the past year, as regards the number of offences taken cognizance of under the Forest Acts:—

Province.	Number of Cases taken into Court.		Number of Cases Compounded.		Total.		Percentage of Convictions to total number of Cases decided by the Courts.	
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.
Bengal	624	443	739	800	1,363	1,243	86	87
N-W. P. and Oudh ...	211	230	152*	570	363	800	85	82
Punjab	1,114	1,074	1,070	831	2,184	1,905	79	75
Central Provinces	397	312	8,444	11,160	8,841	11,472	83	86
Burma	250	194	66	64	316	258	85	82
Assam	51	55	79	34	130	89	67	69
Coorg	22	8	†	...	22	8	61	100
Ajmere	53	47	70	48	123	95	92	90
Baluchistan	1	2	59	9	60	11	100	...
Andamans	1	12	...	...	1	12	100	33
Total ...	2,724	2,377	10,679	13,516	13,403	15,893	82	80
Berar	422	308	...	...	422	308	83	84
Total Bengal Presidency ...	3,146	2,685	10,679	13,516	13,825	16,201	82	81
Madras	2,002	1,764	412	52	2,414	1,816	61	70
Bombay	973	1,041	5,324	3,508	6,297	4,549	66	76
Grand Total ...	6,121	5,490	16,415	17,076	22,536	22,566	72	76

* In the Oudh and School Circles only. The figures (368) for the Central Circle relate to *persons*, not *cases*.

† Compensation, to the amount of Rs. 196-14-4, was recovered from various persons for damage done to sandal trees.

The total number of cases brought into Court was 10 per cent. in excess of the previous year, while the general average of convictions was reduced from 76 to 72 per cent. The number of cases compounded was also decreased by 4 per cent. The Provinces in which prosecutions in Court attained a marked increase were Coorg (64 per cent.), Bengal (29 per cent.), Berar (27 per cent.), Burma (22 per cent.), the Central Provinces (21 per cent.). In Coorg but little judgment would appear to have been exercised in bringing cases into Court, seeing that while the number of cases increased three-fold, the percentage of convictions decreased from 100 in the previous year to 61. In Bengal, the Central Provinces, Burma, and Berar, an excess in the number of prosecutions is set off by the very high average of convictions obtained. On the other hand, Bombay and Assam show

unsatisfactory results. In each the proportion of convictions has decreased to the low standard of 66 per cent. and 67 per cent., respectively, against 76 per cent. and 69 per cent. in the previous year.

The considerable decrease in the number of compounded cases in the Central Provinces is, viewed by the remarks contained in the Report of the previous year, very satisfactory. In Bombay, there has been an increase in the number of compounded cases, amounting to 34 per cent., and the total number of prosecutions (compounded and otherwise) continues to show a large increase from year to year. In the case of Madras, the number of compounded cases is only approximately correct; while for the North-Western Provinces and Oudh, it has only been possible to record results for Oudh and the School Circle.

Bengal.

34. In Bengal, the number of cases taken into Court during the year was 624, as compared with 443 in the previous year, the increase being in the Sundarbans and Orissa Divisions, where the cases were 133 and 232, respectively, against 26 and 185 in the year before. The proportion of convictions to prosecutions in Singhbhum and Chittagong was small. There was a large increase in the number of cases, principally in the Sundarbans; but the majority of the latter were petty cases against permit-holders for not returning permits.

North-Western Provinces and Oudh.

35. The number of cases taken into Court was smaller than in the year before, being 211 only, against 230; and the proportion of convictions was greater. Everything tends to show that the law is worked with great consideration for the people; but it is nowhere stated that the protection of the forests was efficient, except in the case of the School Circle, although, of course, without some confirmation of the kind, a mere statement of the number of prosecutions loses most of its value.

Punjab.

36. The number of cases increased during the year; but the percentage of convictions has also been raised from 75 per cent. to 79 per cent. The circumstance of some 40,000 head of cattle having been impounded shows that the people risk the inconvenience of a journey to the pound and the payment of pound fees, under the Cattle Trespass Act, rather than go to the trouble and cost of placing the animals under a herdsman when grazing near closed forests. There would seem to be no greater hardship in the people having to watch their cattle near forests than there is in their having to do so in the neighbourhood of fields; and it is a matter for consideration whether, in the present circumstances, the pound fees should not be raised under section 70 of the Forest Act.

Central Provinces.

37. There was a want of care in instituting prosecutions in the Bhandara District, and the percentage of convictions decreased in consequence from 86 to 83. This proportion, nevertheless, compares favourably with other Provinces, although it is unsatisfactory to know that there was an increase in the number of cases undetected. It is reported that the breaches of the Forest Law in 2nd class Reserves are much more numerous in proportion to those committed in the other class of Reserves. This was only to be expected, since the former are, as a rule, by their nearer proximity to cultivation, more exposed to injury and thefts. If teaches us the lesson that these 2nd class Reserves ought to be the first brought under a stricter system of management, and that in preference to more remote forests.

Burma.

38. In each of the two Circles there has been an increase in the number of cases taken into Court, but a corresponding increase also in the proportion of

convictions. Seeing the large area of the forests under protection, and the fact that a large percentage of the recorded offences relate to breaches of river rules, the number of cases is extraordinarily small. On the other hand, there is no record to show that the forests are efficiently guarded. A mere summary of cases is no proof one way or the other.

Assam.

39. In Assam, the populations living near the State forests are either supplied with their requirements free of charge, or else pay nominal rates for them. Under such circumstances, breaches of the forest rules must necessarily be small; there were only 51 during the year under review, against 55 in the year before. The prosecutions in Court have, nevertheless, not been so successful, the percentage of convictions having been 67, against 69 in the previous year. On the other hand, the number of compounded cases has more than doubled, and the fines levied on this account have increased five-fold.

Coorg.

40. The general protection of the Reserves is said to have been satisfactory, and it is reported that very few cases of illicit felling or damage to stock occurred. The number of prosecutions for breaches of the Forest Law was 22. They were all petty cases of theft, tresspass, mischief, &c. On the other hand, there was a very great increase in the number of cases over that of the previous year, and this is not satisfactory when it is borne in mind that convictions decreased from 100 per cent. to 61 per cent.

Ajmere.

41. In Ajmere, the total number of cases tried by Magistrates was six in excess of the previous year, the percentage of convictions reaching the very high average of 92. With the exception of three cases of injury to forests by fire, all the cases were of a petty nature. The number of cattle impounded was 3,674, or 526 less than in the previous year. It must here be mentioned that fodder was more plentiful than usual outside the protected tracts; also that many cattle are supposed, from the condition of the forests, to have evaded seizure.

Berar.

42. The number of cases brought into Court has increased considerably. On the other hand, a very high percentage of convictions has been obtained, which is sufficient proof of the law being equitably exercised. It is reported, in connection with the increase of offences, that the Tahsildars often inflict fines too light to serve as a deterrent. Sixty per cent. of the offences were for unauthorized felling and appropriation of wood and minor produce, almost all the others being for unauthorized grazing.

Madras.

43. The considerable apparent increase during the year in the number of cases tried in Court may be due, in part, to compounded cases having been mixed up, in the case of the Southern Circle, with those instituted before the Magistrates. Nevertheless, an increase in the number of cases of unauthorized felling of wood and minor produce is apparent almost in all Districts, and is doubtless indicative of increased vigilance on the part of the protective staff.

Bombay.

44. The increase in the number of unsuccessful prosecutions is not a satisfactory feature; and it is observed that the forests of the Thana District are said to be systematically plundered under cover of the dead-wood concession, which, it is noticed, was given on the special understanding that if abused it would have to be withdrawn.

(II)—PROTECTION FROM FIRE.

General.

45. The following table exhibits the areas under fire-protection, and the results of the year's operations compared with those of the previous year :—

Province.	Area, in square miles.				Proportion of Failures to area attempted.		Cost.				Year when Fire-Conservancy commenced.	Proportion of area under Fire-protection to total area of Reserves.	
	Attempted.		Protected.				Per square mile protected.		Per acre protected.				
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1884-85.	1885-86.	1884-85.
					Per cent.	Per cent.	Rs.	Rs.	Pies.	Pies.		Per cent.	Per cent.
Bengal	1,296	1,259	1,038	980	20	22	15	16	4	5	1872	26	26
N.-W. P. and Oudh ...	1,481	1,156	1,441	1,150	3	1	27	33	8	10	1869	41*	34*
Punjab	251	324	243	324	3	...	4	3	1	1	1871	18*	23*
Central Provinces ...	1,434	1,434	1,364	1,399	5	2	13	13	4	4	1861	7	7
Burma	296	292	238	275	20	6	60	56	18	17	1857	7	8†
Assam	234	210	227	199	3	5	39	52	12	16	1873	10	9
Coorg	199	194	179	176	10	9	15	18	4	5	1876	83	81
Ajmere	144	144	144	144	...	...	4	4	1	1	1874	100	100
Total ...	5,335	5,013	4,874	4,847	9	7	20	22	6	7	...	15	14
Berar	1,046	1,046	1,002	1,023	4	2	6	5	2	2	1879	68	68
Total Bengal Presy.	6,381	6,059	5,876	5,870	8	6	18	19	5	6	....	17	16
Madras	1,634	1,465	1,592	1,427	3	3	11	16	3	5	1867	56*	45*
Bombay	11,429	8,547	10,706	7,983	6	7	¼	1/16	....	...	1874	88‡	92*
Grand Total ...	19,444	16,071	18,234	15,080	6	6	7	9	2	3	...	36	32

* Leased Forests included in area of "Reserves."
† *Taungya* areas not included in area of "Reserves."
‡ In Northern and Sind Circles, 95 per cent.; in Southern Circle (taking Reserved and Protected Forests into account, as done by the Conservator), 79 per cent.

In the Bengal Presidency, there was an increase in the area attempted to be protected of 322 square miles, in Madras of 169 square miles, and in Bombay of 2,882 square miles; or a total increase of 3,373 square miles. In the Bengal Presidency, the principal increase took place in the North-Western Provinces and Oudh. The total area actually protected was in the proportion of 94 per cent. to that attempted, which is the same as that for the previous year, and may be considered a satisfactory result; and the more so that the cost of the operations has been sensibly less in almost all the provinces, notably so in the North-Western Provinces and Oudh, Assam, and Coorg. The largest failures occurred in Bengal and Burma, while the North-Western Provinces and Oudh, Berar, and Madras show the largest areas successfully protected. The cost of protection varies exceedingly; from two annas a square mile in Bombay to Rs. 60 in Burma. Special circumstances attaching to Forest Administration in Bombay, such as an exceptionally numerous establishment whose services are, in great part, available for purposes of fire-protection, and the necessity under which the people are of preserving the grass for their own use, render protection from fire in that Presidency an easier and a proportionately cheaper task than anywhere else in this country; while the opposite extreme of scarce and highly paid labour, added to the circumstance of the Reserves being surrounded by unprotected forest, and by wildernesses of tall and dense grass subject to annual conflagration, make these works both costly and difficult in the case of Burma, Assam, Bengal, and parts of the North-Western Provinces and Oudh. The same causes operate to increase the areas under protection in Bombay, and to diminish them in provinces less exceptionally favoured, and in which protection has to march side by side with the means for making it effectual—means that are not always available. On the other hand, some of the provinces in the Bengal Presidency contain forests that are by their nature self-protecting, and, therefore, without need of special measures of fire-conservancy; others, again, are not sufficiently valuable to pay the cost of fire-protection, or, being merely grazing-lands, do not

demand such protection. Thus in Bengal 67 per cent. of the Reserves are said to be self-protecting, and in Assam 70 per cent.

Bengal.

46. In Bengal, the results of the year's work were more satisfactory than in the year before, and the expenditure has been still further reduced. The greater part of the Singbhum and Angul Reserves was again burnt; but the failures in forests subject to long-standing measures of protection amounted to less than 2·5 per cent.

North-Western Provinces and Oudh.

47. In the North-Western Provinces and Oudh, the results of fire-protection were exceedingly good, better than anywhere else in the Bengal Presidency, excepting in the one matter of cost, which is probably still susceptible of considerable reduction. The area under protection was greatly increased, and, notwithstanding this, only 40 square miles were burnt out of a total of 1,481.

Punjab.

48. In the Punjab, the area attempted shows a decrease of 73 square miles, due to the exclusion from the list of such tracts as required no special measures of protection. On the other hand, protection was not so successful as in the year before, and the cost was greater. It is satisfactory to learn that fires in the Hazara Division are on the decrease—a circumstance attributed to the stringency of the law, and the exertions of Revenue and Police Officers. In the Mooltan Division, the opposite has been the case, and it is feared that this will continue until the Mooltan "raks" and "belas" are settled under the Forest Act.

Central Provinces.

49. In the Central Provinces, the results of fire-protection were, on the whole, good, but the area under protection was not added to, although 93 per cent. of the total area of Reserves continues to be, in this respect, uncared for. This is not satisfactory, even when allowance is made for the circumstance of 20 per cent. of the Reserves not requiring protection.

Burma.

50. In the Pegu Circle, the greater part of the very valuable Tharrawaddy Reserves were burnt, after a successful protection extending from 10 to 17 years. The fires were, in most instances, it is supposed, lighted by dacoits. Doubtless, these forests had been protected so long that the improvement, both in forest growth and reproduction, could not well disappear in a single conflagration; but, nevertheless, the damage done must have been of a very serious character. While only 10 square miles were added to the area under protection in this Circle, the cost of the operations rose very considerably, exceeding, as it did, by Rs. 15 per square mile, that of the previous year.

In the Tenasserim Circle, the results were much more favourable. But the area under protection was reduced there by 6½ square miles, with a view to improving, in the first instance, the means for protection in the case of one of the Reserves. In Burma, very large areas of forest are evergreen and self-protecting.

Assam.

51. In Assam, the very great improvement of the previous year has been maintained. The area under protection was increased by 24 square miles, and both failures and cost have been considerably reduced. It is estimated that 1,611 square miles of Reserves are so situated as to require no special measures of protection, from which we conclude that some 500 square miles of existing Reserves remain subject to annual fires—an area nearly double that under protection.

Coorg.

52. In Coorg, a slight reduction has taken place in the cost of fire-protection; but the results have otherwise been even more unfavourable than in the

year before, 10 per cent. of the area under protection having been burnt. This circumstance is attributed to the bad health of the establishment, but there was evidently also a want of co-operation. It is noticed with regret that, outside the Reserves, no forest is said to escape fire. The disappearance of small sholas by this agency indicates that the fires gain even on the (as yet) naturally protected forests, and that some means of preventing this state of things are imperatively necessary, the more so that the prosperity of the country is threatened by it.

Ajmere.

53. The success of fire-conservancy in Ajmere continues to be complete, and the whole area of Reserves is there under protection.

Berar.

54. Although less fortunate than usual, the results of fire-protection in Berar remain very satisfactory. Late and heavy winter rains rendered the clearing of fire-traces more expensive and difficult than hitherto.

Madras.

55. For Madras, the results of fire-protection were recorded for the official year only, and, as such, they possess but little interest for us, seeing that the Report of the previous year embraced all the critical months—*viz.*, from April to July. But it is satisfactory to learn that 169 square miles of Reserves were added to the area under protection. The latter was thus increased from 45 per cent. to 56 per cent. of the total area of existing Reserves. This increase was effected almost exclusively in the Southern Circle. On the other hand, it must not be lost sight that only some 15 per cent. of the State forests under the control of the Forest Department are fire-protected; and this is a very small proportion when it is borne in mind that in the Northern Circle alone some 20 per cent. of the area under protection is really more or less self-protecting. Again, of the total area of forests in the Presidency, it is believed that more than 5 per cent. receive special measures of protection.

Bombay.

56. In Bombay, the fire-protected area was increased by the very large addition of 2,882 square miles, and, according to the information given, only some 2,500 square miles of forest under the control of the Forest Department remain in which fire-protection is not attempted. The small cost and the extent of fire-protection in Bombay have been already explained. It was in the year under review practically demonstrated that strict fire-conservancy and closure against grazing in ordinary years has the great advantage of saving cattle from starvation in time of drought. It is to be regretted, of course, that such an extreme measure should have been necessary as to open to cattle forests in process of recuperation after long periods of ill-usage; but it was necessary in the present instance, and the State may be thankful that, owing to continued protection from fire and grazing, the fodder resources existed and that a calamity was averted in parts of the Bombay Presidency.

(III)—UTILIZATION.

57. The treatment of the State forest property with regard to its utilization, and the manner in which the demand for forest produce is met, is growing more systematic every year, and more in accordance with the sylvicultural demands of the forests. The main difficulty which opposes itself to a more rapid progress in this respect lies in the long established custom under which the forests and forest produce were used in the most wasteful manner, and without regard for the necessities of future generations. It is naturally a difficult and slow process to remove such custom by reasoning. When an export market and the requirements of Government need only be considered, the forests are worked on preconsidered and economical principles, and are no longer at the mercy of contractors and speculators.

58. In many instances, established rights interfere with the most economical use of the forests, which in such cases must be arranged so as to admit of the exercise of such rights. The manner in which the requirements of the surrounding population are as yet met is, however, more frequently the cause rendering an economic forest management impossible—a management under which the property would yield the largest amount of produce available for the people in the vicinity and the largest revenue to the State.

59. As regards the supply of timber and fuel, no difficulty is, as a rule, experienced, except near large centres of demand, and when concessions for dry wood and fuel have grown up uncontrolled with regard to the manner in which they are exercised. In most instances, however, even concessions of this kind can be brought into accord with the sylvicultural requirements of the forests, and they become purely financial questions in so far as the concessionists benefit at the cost of the general taxpayer.

60. The exercise of grazing and the lopping of trees for fodder or manure, or the removal of fallen leaves and surface soil, are, however, questions which deeply affect the management of the forest property from a sylvicultural, as well as from a financial, point of view. On the one hand, it must be recognized that it would be a waste of the resources of the State if the grass produced in the public forest property remained unutilized; but, on the other hand, the reproduction of the forests is rendered doubtful, patchy, and even impossible when grazing is permitted. It has been proved, moreover, that grazing is by far a more wasteful method of reaping the grass crop than cutting the grass; and Reserves carefully protected for a few years only in the Poona Collectorate have, under the latter method, yielded a revenue many times as large as in the former more wasteful way. It is evident, therefore, that, whenever possible, grass cutting should be substituted for grazing. There are, however, localities and conditions when this is not feasible, and when it is, therefore, necessary to arrange for the exercise of grazing in a manner least hurtful to the regeneration of forest areas. This can be done only by the exclusion, as far as possible, of all browsers, by the periodical closure of areas under reproduction, and by the levying of fees representing more or less nearly the actual market value of the produce supplied. The question presents great difficulties on account of the irregular and inferior condition of many of the forests, and the system of "jardinage" which was, under previous circumstances of utilization, the only natural method of exploitation, and which can only be changed in course of time—for the very reason that the whole of the forests cannot be closed at once and be fire-protected. As long and till the actual market value is not levied on grazing supplied from State forests, herds will exist which are not wanted, and which are, therefore, uncared for.

61. In spite of the difficulties which surround this question, considerable progress has been made in the regulation of grazing.

In *Bengal*, the Forest Reserves are, with a few exceptions, peculiarly free of obligations to provide pasture; and, when this is necessary, rules have been promulgated providing for the restrictions which it was found necessary to impose in order to secure a conservative management of the forests.

Considerable progress has also been made in this respect in *the North-Western Provinces and Oudh*, where large blocks of the more valuable forests have been closed against grazing. Extensive areas, especially in Oudh, are, however, still subject to uncontrolled grazing. They were once covered with forests of sissoo and catechu, of which the remnants as still in existence; at present they are grassy plains, year by year subjected to conflagration by the burning of the surplus supply of uneaten grass.

The area of closed forests in the *Punjab* comprises as yet but a small portion of the extensive State property in waste land and forests. A systematic closure of the "bár" lands in this province is of great importance, in order to

create Fodder Reserves for years of scarcity. It would also be an incalculable blessing to the rich lands in the districts at the foot of the Himalayas, which are now year by year inundated with new sand from the low hills underlying the main mountain range, if extensive closure took place in the Siwaliks; but, unfortunately, the State possessions within these tracts are insignificant.

The areas closed in the *Central Provinces* are extensive, but they are concentrated, and are frequently remote from the cultivated valleys. Much remains, therefore, to be done to provide for the periodical closures of blocks of forests in the 2nd-class Reserves, which are frequently situated nearer the local market, and have to bear the brunt of supplying it with fuel and small wood.

In *Burma* and in *Assam* the grazing question presents as yet no difficulties.

A legal settlement of the grazing rights claimed in the Government forests in *Coorg* is under consideration. This is satisfactory, as without this it is evidently impossible to regulate the grazing in such a manner as to permit of a sylvicultural and conservative treatment of the forests.

The grazing in the *Ajmere* Forest Reserves is managed with such regard to the sylvicultural requirements of the forests as the rights proved to exist will permit.

No arrangements with regard to the exercise of grazing have as yet been made in *Baluchistan*, but without this no reservation or conservative forest management on an adequate scale can be effected.

In *Berar*, the regulation of grazing in the Government forests seems to present no difficulty.

In *Madras*, it would appear that most of the State forests are still subject to almost unrestricted grazing, and that the sylvicultural requirements, in some cases even of forests created Reserves, and in which no grazing rights have been established, are considered to be of secondary importance Under such conditions, it is impossible to secure the permanency of the forest property.

In *Bombay*, also, concessions with regard to free grazing have been made, by executive orders, in Reserves where no rights were proved to exist; but, as a rule, such orders provide for a periodical closing of parts of the forests and otherwise limit the exercise of the concessions, and the question becomes thereby of purely financial interest, involving a loss of legitimate State revenue.

(IV)—NATURAL REPRODUCTION.

62. Natural reproduction must always constitute the mainstay for the maintenance and regeneration of the extensive forest areas of the Empire. Wherever fire-protection is successful, grazing controlled and restricted to areas not under regeneration, the exercise of rights and concessions properly regulated, and the treatment and exploitation of the forest based on scientific principles, there natural reproduction is, consistently with the prevailing natural conditions, reported to be progressing more or less favourably. The most important of these conditions is the quantity and distribution of the rainfall. Where rain is abundant, as in parts of Burma, Assam, Bengal, Bombay, and Coorg, seedlings come up so plentifully and grow up with such great vigour that, unless special care and precautions are taken, the weaker species either have no time to reproduce themselves or get crowded out and suppressed. On the other hand, in the arid parts of the continent, it is hopeless to expect the spontaneous restoration of forest areas that have been ruined by former wasteful use. In both these extreme cases, it is often necessary to have recourse to artificial means; in the former, in order to raise a more or less pure crop of the given valuable species, or to re-establish the forest growth where tall and invasive grasses have taken possession of the ground; in the latter, in order to get up a forest at all, a result that is often impossible of attainment without irrigation or some kind of watering. Again there are waste lands with inhospitable soil, which can be stocked only by means of sowing or planting. These cases excepted, in the larger portion of the remainder of our forest area mere protection and careful treatment will suffice to enable nature alone to re-establish and maintain a more or less full and valuable crop.

It is, of course, unnecessary to repeat facts that have already been recorded and described in former Reports, and in many cases there can be nothing new relative to them to note after the lapse of only twelve months. It must, nevertheless, be observed that the Reports of the Conservators are extremely meagre under the head of natural reproduction, and the remarks made thereon are of too general a character to give any definite idea of what is actually taking place.

General.

63. The area of Plantations and Cultural Operations is exhibited in the following table, which compares the results of the present and the previous year :—

PROVINCE.	AREA, IN ACRES.															
	At the commencement of the year.				Added during the year.				Excluded during the year.				Balance at the close of the year.			
	Regular Plantations.	Cultural Operations.	Taungyas.	Total.	Regular Plantations.	Cultural Operations.	Taungyas.	Total.	Regular Plantations.	Cultural Operations.	Taungyas.	Total.	Regular Plantations.	Cultural Operations.	Taungyas.	Total.
Bengal	2,001	934	...	2,935	149	...	...	149	...	3	...	3	2,150	931	...	3,081
N.-W. Provinces and Oudh ...	2,905	1,303	...	4,208	604	1,162	...	1,766	6	...	...	6	3,503	2,465	...	5,968
Punjab	15,453	2,855	...	18,308	...	395	...	395	8	155	...	163	15,445	3,095	...	18,540
Central Provinces ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Burma	3,693	3,321	8,149	15,163	53	...	2,169	2,222	...	...	...	...	3,746	3,321	10,318	17,385
Assam	1,360	101	...	1,461	31	5	...	36	...	...	...	...	1,391	106	...	1,497
Coorg	949	38	...	987	60	...	...	60	7	...	...	7	1,002	38	...	1,040
Ajmere	383	18	...	401	33	4	...	37	...	...	...	...	416	22	...	438
Baluchistan	15	42	...	57	37	...	...	37	...	...	...	...	52	42	...	94
Andamans	25	...	...	25	18	...	...	18	...	...	...	...	43	...	...	43
Total ...	26,784	8,612	8,149	43,545	985	1,566	2,169	4,720	21	158	...	179	27,748	10,020	10,318	48,086
Berar	1,409	2,130	...	3,539	...	4,416	...	4,416	...	...	...	...	1,409	6,546	...	7,955
Total Bengal Presidency...	28,193	10,742	8,149	47,084	985	5,982	2,169	9,136	12	158	...	179	29,157	16,566	10,318	56,041
Madras	18,946	2,245	31,394*	52,585	755	1,043	19*	1,817	1,042	1,155	...	2,197	18,659	2,133	31,413*	52,205
Bombay	4,339	66,435	...	70,774	865	63,493	...	64,358	66	9,110	...	9,176	5,138	120,818	...	125,956
Grand Total ...	51,478	79,422	39,543	170,443	2,605	70,518	2,188	75,311	1,129	10,423	...	11,552	52,954	139,517	41,731	234,202

* These are "Topes."

Bengal.

64. The regular plantations were increased by 149 acres, by small extensions in Kurseong, Orissa, Darjeeling, and Chittagong. In Orissa the work appears to have been a failure, and this circumstance really reduces the area added during the year to 72 acres only.

North-Western Provinces and Oudh.

65. An addition of 450 acres was made to the promising sissu plantation at Sakhroi in Gorakhpur, which now aggregates 1,400 acres. This, and the thining out of *Pinus excelsa* in Lambatach and neighbouring forests of the School Circle, constitute the only important works of the year.

Punjab.

66. Owing to financial pressure, very little additional work was done during the year. The operations were, in fact, confined to small cultural extensions in Hazara, Chamba, Kulu, Bashahr, and Chenab, resulting in 395 acres being sown with deodar, pines, and various other species. On the other hand, the total area of cultural operations was reduced by as much as 155 acres on account of errors in calculation. At the same time, numerous blanks were sown over in the plantations of Chánga-Mánga and Kot-Lakhpat, while important nurseries were established in the Jhok plantation.

Central Provinces.

67. In the Central Provinces, natural reproduction is, when permitted to have its own way, so successful and abundant that artificial means of propagation are not often necessary, and then only on a very small scale.

Burma.

68. In Pegu, 53 acres of regular plantations and 1,705 acres of re-planted taungyas were added during the year. Of the latter, 1,445 acres were planted with pure teak and 260 acres with a mixture of teak and cutch. In Tenasserim, 464 acres of teak taungya were added. These taungya cultivations have been most successful in Pegu, and should everywhere be sufficiently so to form the nuclei of future teak forests.

Assam.

69. The principal work of extension, as regards regular plantations, took place in the chief rubber plantation of the province—namely, Charduár, in the Darrang District, to which 31 acres were added. Greater progress than this was prevented on account of the retrenchments ordered by Government.

Coorg.

70. In Coorg, 40 more acres were planted with teak and 20 with sandal. A reduction of area, aggregating seven acres, was effected on account of an erroneous calculation. The cost per acre of teak plantations has been Rs. 106-5-5 per acre, and this compares unfavourably with the cost of similar work in Burma, where labour is very expensive.

Ajmere.

71. Sowings are reported to have suffered a good deal from frost.

Andamans.

72. Padouk is just now the only important tree in the Andamans. The seedlings of this species are said to die out in their first year if the cover overhead is not removed. Experiments were made in the artificial reproduction of padouk, and these may result in conclusions of considerable importance.

Berar.

73. Four thousand four hundred and sixteen acres were sown broad-cast, the principal seed used being teak.

Madras.

74. The area of regular plantations remains practically the same as last year. An area of 1,042 acres was excluded, principally by transfer to Cultural Operations and to Reserves, and 755 acres were added, the net result being a decrease in the total area of 287 acres. Only some 500 acres were actually planted during the year, the balance being made up of previous omissions, rectifications of area, &c. The small progress made was due to financial pressure. Cultural operations were continued over an area of 1,043 acres, the most important work being the reclamation of sandy wastes in Tinnevelly, in which palmyra-nuts were put out, although with indifferent success.

Bombay.

75. In the Northern Circle alone, there are 2,116 Forest Guards, who are necessary for the protection of the forests, and the spare time of this establishment is probably employed in restocking considerable areas annually, and that without any extraneous assistance. The result is that in Bombay enormous areas are supplied with seed—that is, either sown broad-cast or in pits, or in ground otherwise prepared for its reception. These operations constitute the only important means of artificial propagation in Bombay. During the present year 65,000 acres were in this way sown over, of which 61,000 acres were in the Northern Circle alone.

(VI)—CREEPER-CUTTING, CLEARANCES, THINNINGS, ETC., ETC.

Bengal.

76. Creepers were cut over a total area of 16 square miles only, although, in his previous year's Report, the Conservator had expressed hopes of being able to considerably extend this useful form of improvement.

North-Western Provinces and Oudh.

77. In the Oudh Circle, creepers were cut over an area of 16 square miles in Bahraich, at a cost of Rs. 400. Very much still requires to be done, more especially in Bhira and Gorakhpur.

In the Central Circle, creepers were cut over 26 square miles of forest, at a cost of Rs. 564. Seeing the extent of the forests and the damage done, it would be well to extend these operations considerably.

In the School Circle, some 10 square miles were cleared of creepers at an average cost of Rs. 70 per square mile, which seems very considerable.

Punjab.

78. In the Punjab, the Jagadhri plantation was thinned, and creepers were cut over two square miles of the Kalesar Forest. Weeding was also executed in Kulu over a small tract.

Central Provinces.

79. It is noticed that considerable attention is paid to the important work of creeper-cutting; but few data are given wherewith to determine the extent of the operations. In Betul, 300,000 creepers were cut at a cost of Rs. 356, while good work was elsewhere done by the Forest Guards without cost. No thinnings were undertaken, and it is stated that there are but few places where they are necessary.

Burma.

80. Works under this heading were mostly confined to plantations, which appear to have been weeded where necessary and cleared of creepers.

Assam.

81. Very little was done in Assam, some five square miles only being cleared of creepers. But the climbers are said not to interfere much with the growth of the trees, except in certain sál forests.

Coorg.

82. Clearings and creeper-cutting operations were executed over 267 acres only, distributed over seven blocks.

Madras.

83. Very little information is given under this head from Madras, although it is reported that creeper-cutting, lopping, and pruning of plantations, and other improvement works, are had recourse to.

Bombay.

84. Some of the improvement works coming under this head are carried out in Bombay with the help of the Forest Guards. The principal operations performed by Forest Guards on their rounds appear to be the extraction of prickly-pear and creepers. Thinnings were continued in the Kadra teak plantation (North-Kanara), and, in Kolaba, the Rajwadi teak plantation was similarly thinned out.

(VII)—COMMUNICATIONS AND BUILDINGS.

General.

85. The outlay under this head during the year is compared as follows with that of the previous year :—

Province.	Roads and Bridges.		Buildings.		Other Works.		Total.	
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	10,154	12,588	12,374	24,493	197	199	22,725	37,280
N.-W. Provinces and Oudh ...	26,388	29,268	9,810	9,908	1,460	1,136	37,658	40.312
	11,843	20,370	13,960	17,146	1,182	3,378	26,985	40,894
	5,710	10,943	9,021	8,713	875	1,130	15,606	20,784
	43,941	60,581	32,791	35,767	3,517	5,644	80,249	1,01,992
Punjab	3,217	4,272	4,442	6,508	19	29	7,678	10,809
Central Provinces ...	1,749	2,934	2,113	1,845	312	1,103	4,174	5,882
Burma	456	2,278	4,961	6,360	3,056	5,120	8,473	13,758
	2	...	5,187	3,573	37	...	5,226	3,573
	458	2,278	10,148	9,933	3,093	5,120	13,699	17,331
Assam	18,837	12,953	9,053	10,873	460	241	28,350	24,067
Coorg	279	760	1,622	952	...	...	1,901	1,712
Ajmere	22	114	55	215	258	643	333	972
Baluchistan	46	...	30	192	...	...	76	192
Total ...	98,703	96,480	72,628	90,778	7,854	12,979	1,59,185	2,00,237
Berar	10,115	15,461	1,808	597	705	187	12,628	16,245
Forest Surveys (Berar) ...	...	...	597	398	...	...	597	398
Total Bengal Presidency ...	88,818	1,11,941	75,033	91,773	8,559	13,166	1,72,410	2,16,880
Madras	2,491	6,050	8,965	11,232	85	...	11,541	17,282
	6,988	12,717	14,071	17,213	159	543	21,218	30,473
	9,479	18,767	23,036	28,445	244	543	32,759	47,775
Bombay	783	1,066	763	2,279	130	605	1,676	3,950
	1,062	2,005	4,582	6,041	313	477	5,957	8,523
	...	2	90	760	600	...	690	762
	1,845	3,073	5,435	9,080	1,043	1,082	8,323	13,235
Grand Total ...	1,00,142	1,33,781	1,03,504	1,29,298	9,846	14,791	2,13,492	2,77,870

86. The totals for the Bengal Presidency during the previous five years have been as follows:—

	Rs.
1880-81	1,38,324
1881-82	1,88,027
1882-83	1,99,066
1883-84.	1,84,998
1884-85	2,16,880

The above figures show an average of Rs. 1,85,459, or a difference of Rs. 13,049 in favour of the year under review, of which the expenditure has been Rs. 44,470 less than that of 1884-85. Including Madras and Bombay, there has been a reduction of expenditure amounting to Rs. 64,378.

Doubtless, in some provinces the work of communications and buildings is advancing towards completion—as in Oudh, for instance—and we may there look forward to a steady decrease in expenditure under this heading. Generally speaking, however, the considerable reduction observed in the outlay of the present year has been the direct result of financial pressure, and the call for economy. The consequence has been that only such works were undertaken during the year of which the execution was more or less urgently demanded. The greatest expenditure under this heading occurs in the North-Western Provinces and Oudh (Rs. 80,000); next come, in order of sequence, Madras (Rs. 33,000), Assam (Rs. 28,000), Bengal (Rs. 23,000), Burma (Rs. 14,000), Berar (Rs. 13,000), Bombay (Rs. 8,000), Punjab (Rs. 8,000), Central Provinces (Rs. 4,000), Coorg (Rs. 2,000), Ajmere (Rs. 300).

The proportion of cost, and the necessity for works under this heading, will vary according to the accessibility of the forests and the distance of the markets. In these respects, the Himalayan regions are, of course, the most unfavourably situated, excepting always the Punjab, with its numerous large and navigable rivers. On the other hand, it must not be lost sight of that, both as regards necessary roads and buildings for the convenience and well-being of their Forest Officers, the North-Western Provinces and Oudh are far in advance of all the other provinces, and this is notably the case in Oudh, where the works have almost attained completion. Elsewhere, as in Bombay and the Central Provinces, the comparative unimportance of the annual expenditure on communications and buildings, although principally due to the greater accessibility of the forests and the smaller requirements in connection with these works, is unfortunately to some extent not warranted by circumstances, and a larger annual outlay would then appear to be called for.

Bengal.

87. The principal work was done in Kurseong, Hazaribagh, and Singbhum. On roads were expended Rs. 10,154, against Rs. 12,588 in the previous year; and Rs. 12,374 on buildings, against Rs. 24,493 in 1884-85.

North-Western Provinces and Oudh.

88. There was a saving of Rs. 21,743 on the previous year, and, although this was principally effected for financial reasons already referred to, the advanced state of communications everywhere in these provinces is such as to give hopes of a steady future reduction of expenditure.

Central Provinces.

89. There can be no doubt that many of the best forests in the Central Provinces are underworked in the absence of proper channels of communication. It is true that the expenditure of the year was curtailed to the utmost by order of Government; still that of previous years has been out of proportion to the requirements of the case.

Assam.

90. The work on the important Dambu cart-road was proceeded with: it opens out one of the richest forest tracts in the Garo Hills. In Assam, the State forests have to compete with difficulties in the way of demand, and it is most necessary to cheapen the means of transport.

Berar.

91. The progress made in opening out the Melghât Forests by a system of excellent roads is most satisfactory.

Bombay.

92. In Bombay, very much could be done towards opening out the more distant forests; and it is satisfactory to see that this subject has not passed unnoticed by the Civil authorities. The mere fact of fuel having to be imported into Bombay from Sind would seem to show that the subject of communication does not receive all the attention which it deserves.

(VIII)—DEMARCATION AND IMPROVEMENT OF FORESTS.

93. The expenditure during the year under these heads was as follows :—

Province.	Demarcation.		Compensation for Land and Rights.		Surveys and Working-Plans.		Plantations.		Protection from Fire.		Other works.		Total.	
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal ...	9,346	10,309	1,991	40	1,466	1,722	7,577	10,500	14,871	15,901	925	1,280	36,176	39,752
N.-W. P. & Oudh.	3,123	1,032	...	...	1,407	2,692	2,797	3,557	16,785	16,916	498	1,712	24,610	25,909
	3,453	4,303	34	21	1,053	...	5,353	6,164	10,825	11,197	4,328	9,138	25,046	30,823
	979	2,061	300	750	2,665	2,465	3,425	4,139	7,878	10,232	2,534	2,534	17,781	22,181
	7,555	7,396	334	771	5,125	5,157	11,575	13,860	35,488	38,843	7,360	13,384	67,437	78,913
Punjab ...	28,776	8,396	593	5,241	1,864	1,962	30,080	49,144	1,186	926	2,371	2,011	64,870	67,680
Central Provs.	11,825	10,480	61	60,040	1,249	1,538	247	406	18,000	17,585	2,760	3,730	34,142	93,779
Burma ...	4,212	4,284	1,878	277	5,149	8,081	27,272	29,075	11,114	11,342	326	424	49,951	53,483
	1,071	357	...	60	96	73	3,754	3,784	4,941	4,377	86	83	9,948	7,734
	5,283	4,641	1,878	337	5,245	8,154	31,026	32,859	16,055	15,719	412	507	59,899	62,217
Assam ...	9,018	8,492	350	525	6,834	7,803	6,499	8,371	8,846	9,930	7,955	7,963	39,502	43,084
Coorg ...	1,011	1,137	...	...	2,988	1,895	6,240	16,773	2,647	3,185	54	38	12,990	23,028
Ajmere ...	50	54	...	...	...	...	1,059	1,404	213	604	1,146	1,059	2,468	3,121
Baluchistan ...	408	3	...	...	19	...	1,456	320	...	...	169	91	2,052	414
For. Sur. (Impl.)	...	...	...	...	3,085	2,110	...	...	...	...	...	...	3,085	2,110
Total ...	73,272	50,908	4,857	66,954	12,926	30,341	95,759	1,33,637	97,356	1,02,195	23,152	30,063	3,22,621	4,14,098
Berar ...	231	674	123	1,059	...	...	1,520	1,788	5,840	4,697	25	381	7,739	8,599
Forest Survey (Berar).	...	...	...	...	6,463	5,018	...	...	...	...	...	...	6,463	5,018
Total Bengal Presidency.	73,503	51,582	6,330	68,013	34,338	35,359	97,279	1,35,425	1,03,196	1,06,892	23,177	30,444	3,36,823	4,27,715
Madras ...	13,060	11,971	1,505	2,306	39	36	24,816	29,726	10,420	9,653	2,242	1,715	52,082	55,407
	9,728	11,092	1,081	9,050	1,068	1,249	38,428	40,697	15,047	9,292	23,060	20,591	88,412	91,971
	22,788	23,063	2,586	11,356	1,107	1,285	63,244	70,423	25,467	18,945	25,302	22,306	1,40,494	1,47,378
Bombay ...	39,208	1,694	15,039	39,984	2,335	4,430	6,186	6,850	1,457	973	1,577	1,72,752	65,802	2,26,683
	11,136	2,235	...	123	191	4,645	7,122	7,199	1,651	2,269	223	27,727	20,323	44,196
	4,425	2,174	...	69	2,977	6,314	4,917	4,367	...	299	3,270	10,148	15,389	23,371
	54,769	6,103	15,039	40,176	5,503	15,387	18,225	18,416	3,108	3,541	5,070	2,10,627	1,01,714	2,94,250
Grand Total ...	1,15,060	80,748	22,955	1,19,545	40,948	52,031	1,78,748	2,24,264	1,31,771	1,29,378	53,549	2,63,377	5,79,031	8,69,343

94. The expenditure on demarcation and improvement of forests in the Bengal Presidency during the past five years has been as follows :—

					Rs.
1881-82	...	...	...	...	3,22,449
1882-83	...	...	...	...	3,27,704
1883-84	...	...	...	...	3,53,629
1884-85	...	...	...	...	4,27,715
1885-86	...	...	...	...	3,36,823
Average	...	...	...	...	3,53,664

CHAPTER IV.

Working and Yield.

General.

95. The total outturn in material obtained each year from our Indian Forests is, both as regards its quantity and value, exceedingly difficult to determine—at least under existing conditions of administration and management. We have certain information, it is true, in regard to that portion of the yield which contributes to the revenues of the Department; but this constitutes only a fraction of the annual drain upon our forest resources, subserving as these do, almost everywhere, to an immense demand on the part of bordering populations, who are permitted to supply themselves with their requirements without any payment in return, or on payment of rates very much below those obtaining in the neighbouring markets. An endeavour which was made this year to secure some reliable data in connection with the forest produce received by the people free of charge, and the diminution in revenue incurred by the Department on this account, as on that of having to provide extensive demands at rates either very low, or altogether nominal in amount, has not proved successful. And yet, until in a position to supply this information, we can form but a very imperfect idea of the part played by the State forests in the national wealth, of their usefulness, of their necessity; since we have no sufficient evidence to show of that which is given away to the people, of the extent to which the people are dependent on the Government forests, on their permanency, and on their good management. Take the single district of Bahraich in Oudh as an instance. Some eighty thousand persons here obtain, free, all their timber, all their firewood, and all forest produce necessary to them, and graze their cattle at half the ordinary rates. Throughout India the agricultural populations living for considerable distances near the State forests enjoy some similar concessions from Government. In times of scarcity, Reserved Forests protected at great expense, and regenerated with a growth no longer burnt, nor subject to the destroying agency of unrestricted felling, lopping, and grazing, have been frequently opened to the starving cattle, whereby much loss has been averted from the people, who, in return, have had to pay nothing, or something very trifling, for the succour thus timely afforded them. The beneficial influences of Forest Conservancy, as indicated in the use and value of the State forests to the people, can hence hardly be appreciated from a mere consideration of the growing revenues of the Department; since, side by side with this increase in the demand on the part of the paying portion of the community, exists the increasingly heavy drain of the masses who contribute little or nothing in return. And yet, as we have observed, the former class of outturn has alone, up to the present, been recorded by Conservators with any approach to accuracy; and this is, in part, accounted for by the fact that where, as is often the case, the whole population bordering on the forests has permission to supply itself with every kind of forest produce that it may require for purely household purposes, the protective and executive Forest Establishments are then unequal to the task of exercising such strict control over exports by these people, at least without causing grave inconvenience to the consumers, as would result in a proper record being kept of the outturn from this source. Of course this circumstance applies most strongly to a daily necessary such as fire-wood, which constitutes the principal requirement of the masses, and is generally taken out by them in small quantities, most often in headloads, according as it is wanted for use. Still, even difficulties such as these should give way to an improved system of control and management, such as is indicated in a localization of the supply areas, and a provision that each class of produce shall be collected and removed at fixed periods only, and in fixed quantities, according to the requirements, not of each individual, but of each village unit. Generally speaking, therefore, there should be no insurmountable difficulty in the issue of such annual returns by Conservators as will furnish a correct idea of the total outturn from State forests in respect of produce unpaid for, or paid for at rates below those obtaining in the market.

Bengal.

96. The outturn of the several classes of forests, arranged according to the agency employed for the extraction of produce, is as follows :—

	Outturn, in cubic feet.			Bamboos.
	Timber.	Fuel.	Total of Timber and Fuel.	No.
Reserved Forests.				
By Government Agency ...	81,841	160,298	242,139	998,903
„ Purchasers ...	5,959,663	13,223,598	19,183,261	2,894,369
Free Grants ...	8,120	175	8,295	...
Total Reserved Forests ...	6,049,624	13,384,071	19,433,695	3,893,272
Protected and Unclassed Forests.				
By Government Agency ...	5,524	...	5,524	13,932
„ Purchasers ...	529,072	5,375,075	5,904,147	20,463,940
Free Grants	1,296	...	1,296	14,041
Total Protected and Unclassed Forests.	535,892	5,375,075	5,910,967	20,491,913
Grand Total in 1885-86 ...	6,585,516	18,759,146	25,344,662	24,385,185
„ „ 1884-85 ...	5,654,481	16,349,408	22,003,889	21,710,126
Increase in 1885-86 ...	931,035	2,409,738	3,340,773	2,675,059

As compared with the previous year, the outturn in timber and fuel, as well as in bamboos, has largely increased. The increase in the outturn of timber and fuel is more than accounted for in the returns of the Sundarbans Division. The average outturn of wood per square mile, as compared with the results of the previous year, is as follows :—

Class of Forest.	Area, in square miles.	Total outturn of Wood, in cubic feet.	Outturn in cubic feet per square mile.
Reserved Forests	4,972	19,433,695	3,909
Protected and Unclassed Forests	6,252	5,910,967	945
In 1885-86	11,224	25,344,662	2,258
„ 1884-85	11,493	22,003,889	1,915
Increase or decrease in 1885-86 ...	—269	+3,340,773	+343

The increase in the outturn of bamboos is accounted for in the Palamow Sub-Division and in the Chittagong District Forests.

The outturn of minor forest produce was :—

	Removed by Purchasers.			Free Grants.		
	Maunds.		Tons.	Maunds.		Tons.
From Reserved Forests ...	3,632,177	or	132,960	1,443	or	50
„ Protected and Unclassed Forests ...	1,578,832	„	57,800	...	„	...
Total ...	5,211,009	or	190,760	1,443	or	50

The chief items exploited were Golpatta (*Phœnix paludosa*), thatching material, laterite, shells, Nal (*Bambusa arundinacea*), Hintal (*Phœnix paludosa*), canes, wax and honey, and Chut, and the Sundarbans Division produced upwards of three-fourths of all the minor forest produce extracted.

North-Western Provinces and Oudh.

97. According to the statements submitted, the fellings of the year yielded the following material :—

Circle.	Selection Fellings.			Thinnings.			Clearances.			Grand Total.		
	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.
	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.
Central ...	398,438	189,926	588,364	31,575	10,390	41,965	258,198	933,761	1,191,959	688,211	1,134,077	1,822,288
Oudh ...	682,436	58,760	741,196	98,878	648,807	747,685	3,127,436	1,548,663	4,676,099	*3,908,750	*2,256,230	*6,164,980
School ...	438,339	107,220	545,559	125,890	40,344	366,234	58,790	390,647	449,437	623,019	738,211	1,361,230
Total ...	1,519,213	355,906	1,875,119	256,343	899,541	1,155,884	3,444,424	2,873,071	6,317,495	5,219,980	4,128,518	9,348,498

The total yield is 3,400,000 cubic feet in excess of the previous year. This large outturn is due to the extensive sleeper operations in Oudh which were considered necessary to meet a sudden demand, were justified by reserves of growing stock resulting from former short fellings, and were unobjectionable with regard to the sylvicultural conditions of the forests. The proportion between the yield in timber and firewood is 5 to 4.

The following table shows the extent to which the several agencies were employed in the extraction of timber and firewood :—

Circle.	By Departmental Agency.			By Purchasers.			By Right-holders.			Free Grants.			Grand Total.		
	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.	Timber.	Firewood.	Total.
	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.	Cub. ft.
Central	81,737	209,832	291,569	507,110	806,845	1,313,955	87,869	103,892	191,761	11,495	13,508	25,003	688,211	1,134,077	1,822,288
Oudh...	1,117,127	474,110	1,591,237	978,006	1,294,712	1,672,718	20,000	...	20,000	2,394,617	485,408	2,880,025	*3,909,750	*2,254,230	*6,163,980
School	151,896	252,404	404,300	362,198	473,807	836,005	...	12,000	12,000	108,925	...	108,925	623,019	738,211	1,361,230
Total ...	1,350,760	936,346	2,287,106	1,247,314	2,575,364	3,822,678	107,869	115,892	223,761	2,515,037	498,916	3,013,953	5,220,980	4,126,518	9,347,498

* The difference between these sets of figures cannot be reconciled from the Report.

The large quantity of wood removed under free grants has attracted the attention of the Governor-General in Council. According to the statements submitted, the timber thus extracted during the year under review, which was one of considerable departmental activity in regard to timber extraction, amounts in cubical contents to nearly half of the whole timber yield, and to upwards of 12 per cent. of the fuel produced. It is understood that the material thus granted is of much less value than that extracted by Government, or by purchasers on payment; but, nevertheless, the question seems to be of sufficient financial importance to deserve careful consideration on the part of the Local Government.

The income from minor forest produce amounted, according to the statements submitted, to Rs. 2,97,149, which was almost entirely realized from purchasers. Only Rs. 11,881 worth of minor forest produce was granted free.

It was remarked, in the previous year's review, that the method of forest exploitation practised in the Garhwal and Kumaun Divisions of the Central Circle was that known as the "Kham-Tehsil" system, and it was pointed out that this system could hardly reconcile itself to the requirements of a careful, sylvicultural, and economical method of working the forests. It has, however, since transpired, from an excellent Note by Mr. Bagshawe on the administration and management of these valuable Sub-Himalayan Forests, that while the name of the old system of working had been retained, that now in practice has been divested of most of what was objectionable under the so-called "Kham-Tehsil" system. In these circumstances, it is satisfactory to learn that the name itself, misleading as it was, has been abolished, and that the new order of things is indicated by the more appropriate term of "the Revenue-Depôt and Permit System." The chief improvement on the original system consists in the previous selection and marking of all green trees of important species destined to be felled, and the obligation on all exporters to provide themselves, in the first instance, with permits before commencing operations in the forest.

Punjab.

98. The following trees were felled by Government agency :—

Description.	Number.
Deodar	6,144
Boxwood	1,130
Other trees	266
Total in 1885-86 ...	7,540
„ „ 1884-85 ...	4,617
Increase in 1885-86 ...	2,923

The outturn of timber, fuel, charcoal, and bamboos has been as follows :—

Description.	By Government agency.	By Purchasers.	Free grants.	Right-holders.	Total.
Timber (cubic feet)	1,029,912	446,926	236,016	188,480	1,901,334
Firewood („)	1,837,857	6,275,565	...	...	8,113,422
Charcoal („)	13,527	...	...	...	13,527
Total ...	2,881,296	6,722,491	236,016	188,480	10,028,283
Bamboos (number)	824,151	28,845	...	23,775	876,771

The timber removed by right-holders is stated to have amounted to 188,000 cubic feet, and 236,000 cubic feet were given away in free grants.

Central Provinces.

99. The extraction of forest produce by departmental agency was reduced to a minimum, and only 182 sâl trees were felled, against 19,432 in the previous year. This contraction of departmental operations, the Conservator explains, was necessary on account of the uncertainty prevailing in respect of the demand for timber. This remark, it is understood, refers only to large timber used for railways and other constructive works. But it seems evident that the amount of forest produce extracted from the Government Forests by purchasers and consumers has also fallen off as regards timber, firewood, charcoal, and bamboos; and, to judge from several references made by the Conservator, the reason for this decrease in the utilization of the Government Forests must evidently be looked for in the competition of more favourably situated Private Forests. The decrease in the sale of timber and fuel to extractors and consumers has now been noticed for two successive years, and the causes of it should be ascertained, and if possible removed.

Burma.

100. The following girdling operations took place during the year under review :—

Circle.	Teak.			Other Trees, outside Reserves.	Total.
	Inside Reserves.	Outside Reserves.	Total.		
Pegu	1,706	13,870	15,576	300	15,876
Tenasserim	1,930	368	2,298	250	2,548
Total in 1885-86 ...	3,636	14,238	17,874	550	18,424
„ 1884-85 ..	3,785	14,361	18,146	6,009	24,155
Decrease in 1885-86 ...	149	123	272	5,459	5,731

The yield of the forests can be summarized as follows :—

	Outturn, in tons.		
	Teak.	Other kinds.	Total.
By Government Agency	32,073	4,341	36,414
By Purchasers and under Trade Permits ...	331	41,584	41,915
Under Free Permits	437	866	1,303
By Lessees of Forests	2,602	381	2,983
Total in 1885-86 ...	35,443	47,172	82,615
„ 1884-85 ...	48,008	84,782	132,790
Decrease in 1885-86	12,565	37,610	50,175

There has been a large decrease in the outturn of timber. The decrease in the outturn of teak, which is chiefly extracted by direct Government agency, was due to blocks in one of the more important floating streams, and to other causes resulting in the late arrival of timber. The small outturn of timber of other kinds was a natural consequence of the disturbed state of the country, which largely affected the extraction of such timber by purchasers and consumers.

The imports of foreign timber into British Burma, as exhibited in the following table, show a serious decrease, amounting to upwards of 20 per cent. :—

Year.	Quantity, in tons.		
	Pegu Circle.	Tenasserim Circle.	Total.
1885-86	73,346	117,099	190,445
1884-85	80,993	158,103	239,096
Decrease in 1885-86	7,647	41,004	48,651

The exports were as follows :—

Year.	From Moulmein.		From Rangoon.		Total.		
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Average value per ton.
		Rs.		Rs.		Rs.	Rs.
1885-86	105,240	83,09,160	63,368	53,72,330	168,608	1,36,81,490	81·1
1884-85	95,849	85,79,117	52,128	48,39,664	147,977	1,34,18,781	90·7
Increase or decrease in 1885-86	+9,391	—2,69,957	+11,240	+5,32,666	+20,631	+2,62,709	—9·6

The small outturn of timber of other kinds was a natural consequence of the disturbed state of the country, which largely affected the extraction of such timber by purchasers and consumers.

Assam.

101. The outturn of the Assam forests in timber, fuel, and bamboos was as follows :—

Class of Forests.	Timber (selection-fellings).	Fuel.	Bamboos.
	Cub. ft.	Cub. ft.	No.
Reserved Forests.			
By Government Agency	1,476	...	...
„ Purchasers	349,078	17,754	565,224
Free Grants	20,152	10,000	1,700
Total ...	370,706	27,754	566,924
Protected Forests.			
By Government Agency	...	...	...
„ Purchasers	43,377	50	248,925
Free Grants	17,710	...	...
Total ...	61,087	50	248,925
Unclassed Forests.			
By Government Agency	1,872	...	...
„ Purchasers	343,151	82,759	182,973
Free Grants	422,158	309,103	1,406,562
Total ...	767,181	391,862	1,589,535
GRAND TOTAL IN 1885-86 ...	1,198,974	419,666	2,405,384
„ „ „ 1884-85 ...	802,949	84,581	818,166
Increase in 1885-86	396,025	335,085	1,587,218

The outturn by direct Government agency is insignificant. It is noticed that some 460,000 cubic feet of timber were removed under free grants, out of a total yield of 1,199,000 cubic feet ; and that 319,000 cubic feet of fuel were similarly given away, out of a total of 420,000 cubic feet which the forests supplied ; also 1,408,000 bamboos, out of 2,405,000. This shows that more than half of the yield of the State forests was surrendered free of charge.

The produce extracted under free grants was mostly obtained from District Forests, and it is doubtless the right policy to treat the inhabitants, especially of villages situated in or near the Government forests, with considerable liberality ; but, at the same time, the fact must not be lost sight of that a permanent local market is of great importance to a sound system of Forest Administration, in view of the circumstance that a considerable portion of the revenue derivable from forest property has to be spent on its supervision, protection, and management. Financial success becomes impossible when by far the greater portion of the produce of a forest not only yields no revenue, but, on the contrary, involves considerable charges under supervision and control. These considerations would appear to furnish a strong argument in favour of extending the formation of Reserves more energetically than has been the case of late. In these Reserves, free grants should, in the absence of established rights, only be granted under exceptional circumstances and after careful consideration of each case.

As regards timber removed by purchasers, it is noticed that the extraction of sâl logs for export to Bengal has still further decreased ; but, on the other hand, a considerable increase has taken place in the exploitation of timber used in the province, and the Conservator believes that there is now every prospect of a revival of the trade in sâl timber as well.

The outturn of minor forest produce is exhibited as follows :—

Class of Forests.	Rubber.	Canes.	Thatching Grass.
	Maunds.	Bundles.	Bundles.
Reserved Forests.			
By Government Agency	8	...	...
,, Purchasers	...	37,684	...
Free Grants	...	78	...
Total ...	8	37,762	...
Protected Forests.			
Nil.			
Unclassed Forests.			
By Government Agency	7	...	...
,, Purchasers	...	405,523	...
Free Grants	...	21,137	2,700
Total ...	7	426,660	2,700
Grand Total	15	464,422	2,700

The sale of Rubber Mahals realized Rs. 31,428. The imports of Rubber are recorded as 983 maunds and the exports as 6,658 maunds, showing that 5,675 maunds were collected locally. This represents a considerable decrease as compared with last year's work, when the local collections amounted to 7,290 maunds.

Coorg.

102. The number of trees felled in Reserves by Government agency compares with the operations of the previous year as follows:—

Year.	Teak.	Other Trees.	Total.
	No.	No.	No.
1885-86	874	1,015	1,889
1884-85	658	843	1,501
Increase in 1885-86	216	172	388

The produce removed by purchasers from Reserved Forests, consisting mainly of poles, firewood, and bamboos, is exhibited as follows:—

Teak	32	trees
Poon, Irupoo, Honne, &c.	299	„
Miscellaneous	1,283	poles.
Firewood	3,165	cart-loads.
Bamboos	197,518	

The summary of the produce disposed of from the Reserved Forests shows that Rs. 42,248 were realized therefrom, against Rs. 52,222 in the previous year, the possible yield being roughly estimated at about Rs. 1,00,000.

The number of trees removed from unreserved Government forests is unimportant, amounting to 67 only, and 500 bamboos.

From alienated lands 188 trees were sold.

The following is an abstract of the sandalwood operations of the last five years:—

Year.	Quantity brought to depôts.	Quantity sold.	Amount realized.	Average per ton.
	Tons.	Tons.	Rs.	Rs.
1881-82	126¾	60¾	14,059	231
1882-83	117⅓	192¼	77,407	403
1883-84	74¼	36¼	10,908	301
1884-85	72¼	118¾	35,650	300
1885-86	80½	118½	27,954	236

The cost of collecting sandalwood was still further reduced from Rs. 28-11-6 to Rs. 25-6-3 per ton; but, as the Government carting establishment had been broken up, great difficulty was found in procuring the necessary carriage, and the collections are still far below those made in former years.

The income from cardamoms has decreased by Rs. 3,258, or 15·7 per cent., owing to a great fall in the price of that commodity. In future the cardamom malés will be sold on longer leases, extending over 21 years. The sale will, as formerly, be conducted by the Civil authorities, who will also be responsible for the collection of the revenue; but the protection and management of the malés will be placed entirely under the Forest Department.

Andamans.

103. As far as can be gathered from Mr. Ferrars' Report and statements, the following timber was girdled during the year:—1,243 padouk trees and 4,859 miscellaneous trees.

The balance of timber in the depôts at the beginning of the year is given as 1,255 logs, aggregating 394 tons. During the year, 6,332 logs, or 3,086 tons, were brought from the forests into depôts. Of these, 4,353 logs, or 1,951 tons, were made over, in the round, to local Departments, and 2,608 logs, containing 1,082 tons, were transferred to the Saw-mill, leaving a balance of 626 logs, or 447 tons, in depôts. Whether this includes the timber stored at Shoal Bay cannot be ascertained from the Report, nor even the proportion of padouk timber. Two hundred and twenty-five tons of converted timber were made over to local Departments from the Saw-mill account.

The timber exported amounted to 557 tons, of which 440 tons were padouk, and only 34 tons were sold locally.

No very clear view can be obtained from the Report regarding the success of the year's export operations. It seems clear, however, that it will not be possible to realize the high prices formerly obtained for small quantities, if larger shipments are placed in the market; but, at the same time, the cost of extraction is so small that a fair profit will remain even if the timber is sold at the rate realized for greenheart.

Berar.

104. The departmental fellings which took place in the Melghat, aggregating 642 trees, were more of the character of improvement-fellings, the exploitation consisting of the removal of badly-grown stock in order to produce a more healthy coppice. No other departmental operations took place, but the following table shows the outturn of timber and fuel removed by purchasers:—

Class of Forests.	Outturn, in cubic feet.		
	Timber.	Firewood and Charcoal.	Total.
State Reserves	9,672	43,456	53,128
District „	3,500	2,058	5,558
Unclassed Forests	267,606	267,509	535,115
Total in 1885-86 ...	280,778	313,023	593,801
„ 1884-85 ...	327,805	352,590	680,395
Decrease in 1885-86	47,027	39,567	86,594

The outturn of minor forest produce is exhibited as follows:—

Class of Forests.	Bamboos.	Grass.	Minor Produce.
	No.	Tons.	Tons.
State Reserves	1,421,684	6,425	60⅔
District „	37,068	3	...
Unclassed Forests	1,256,549	2,213	5,144⅔
Total in 1885-86 ...	2,715,301	8,641	5,205
„ 1884-85 ...	3,248,626	10,238	1,267
Increase or decrease in 1885-86	—533,325	—1,597	+3,938

It is observed that the farming out of the Naka stations has been proposed and approved of. This is a measure which does not seem commendable in itself, especially at a time when doubt has, on several occasions, been expressed by the Conservator regarding the effective control of the *nákas* by his Department. The full revenue obtainable will, under these circumstances, hardly be realized.

The amount realized as the value of grazing by cattle admitted into the forests was as follows:—

Class of Forests.	Cattle.	Grazing value.
	No.	Rs.
State Reserves	56,600	12,671
District „	680,117	55,672
Unclassed Forests	153,180	9,558
Total ...	889,897	77,901

Madras.

105. No comparison of the yield and working of the year with that of previous years is made by either Conservator, and the annual timber returns of the Southern Circle are admittedly incorrect. In these circumstances, it is impossible to review with profit the operations of the year, the more so that the outturn in given in a variety of measures, such as cubic feet, tons, maunds, &c.

From the statements showing the quantity of produce granted free of payment in the Southern Circle, it appears that the forests not under the control of the Forest Department are, even under the present wasteful and unconservative treatment accorded to them, generally sufficient to meet the requirements of the people, without recourse to the State forests.

Bombay.

106. The subject of the yield of the State forests is exhaustively dealt with in the Conservators' Reports, and discloses satisfactory results, both with regard to the yield of wood and that of minor forest produce; but so long as the considerable amount of produce extracted under privileges and concessions is not credited to the forests, the information regarding the annual yield must continue incomplete.

CHAPTER V.

Financial Results.

General.

107. The Receipts and Surplus of the various provinces during the year under review, arranged according to the total amount of Revenue, are as follows:—

No.	Provinces.	Revenue.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue.
		Rs.	Rs.	Rs.	Per cent.
1	Bombay	33,66,286	15,26,825	...	45
2	Burma	20,23,859	8,72,907	...	43
3	North-Western Provinces and Oudh ...	14,61,495	4,86,976	...	33
4	Madras	11,98,650	2,60,678	...	22
5	Central Provinces	10,36,894	5,91,462	...	57
6	Punjab	8,50,419	1,74,936	...	21
7	Bengal	5,97,432	2,27,033	...	38
8	Berar	3,19,851	1,60,609	...	50
9	Assam	1,96,656	...	14,838	...
10	Coorg	89,386	23,696	...	27
11	Andamans	23,944	...	13,091	...
12	Baluchistan	14,962	...	837	...
13	Imperial	14,708	...	73,537	...
14	Ajmere	9,697	...	6,772	...
15	Forest Surveys (Berar)	631	...	42,309	..
16	Forest School	273	...	23,966	...
17	Forest Surveys (Imperial) ...	202	...	18,978	...
	Total ...	1,12,05,345	41,30,794	...	37

The gross Revenue rose during the year from 102 lakhs to 112 lakhs, which constitutes the highest figure yet attained to since the Department was first organized.

The Surplus Revenue for the last five years is shown in the following table. from which it will be seen that the Surplus obtained during the present year was only slightly inferior to that of 1883-84, the largest hitherto made:—

Year.	British territories.				Berar.	Grand Total.
	Bengal Presidency.	Madras.	Bombay.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1881-82	23,04,184	2,03,489	6,58,936	31,66,609	80,526	32,47,135
1882-83	26,42,642	2,61,090	8,11,583	37,15,315	1,36,960	38,52,275
1883-84	29,05,697	1,66,971	9,38,928	40,11,596	1,36,396	41,47,992
1884-85	17,86,464	2,70,411	9,96,119	30,52,994	1,10,666	31,63,660
1885-86	22,24,991	2,60,678	15,26,825	40,12,494	1,18,300	41,30,794

Bengal.

108. The following table shows the financial results of the year under review as compared with those of 1884-85 :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.	Revenue per square mile of Forests.	
					Gross.	Net.
	Rs.	Rs.	Rs.	Per cent.	Rs.	Rs.
1885-86	5,97,432	3,70,399	2,27,033	38	53	20
1884-85	5,71,152	4,11,915	1,59,237	28	50	14
Increase or decrease in 1885-86	+26,280	—41,516	+67,796	+10	+3	+6

The Receipts have increased, as was anticipated; and, consequent on a considerable reduction in the expenditure, the Surplus represents 38 per cent. of the gross Revenue, which is an advance of 10 per cent. over that of the previous year.

North-Western Provinces and Oudh.

109. The financial results of the year were as follow :—

Circle.	Receipts.	Charges.	Surplus		Proportion of Surplus to gross Revenue in 1885-86.
			1885-86.	1884-85.	
	Rs.	Rs.	Rs.	Rs.	Per cent.
Central	4,43,133	2,64,479	1,78,654	2,30,585	40
Oudh	6,81,713	5,03,197	1,78,516	2,26,264	26
School	3,36,649	2,06,843	1,29,806	95,369	39
Total in 1885-86 ...	14,61,495	9,74,519	4,86,976	...	33
Total in 1884-85 ...	15,72,319	10,20,102	5,52,218	...	35
Decrease in 1885-86	1,10,826	45,582	65,242	...	2

The Surplus has decreased since last year by Rs. 65,000. The fall in Revenue occurred in the Central and Oudh Circles. The School Circle, on the other hand, has shown for some years past a gradually, but steadily, increasing revenue, which seems to some extent due to the system of management.

Punjab.

110. The financial results compare with those of the previous year as follows :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
1885-86	8,50,419	6,75,483	1,74,936	21
1884-85	7,49,352	5,58,070	1,91,282	26
Increase or decrease in 1885-86	+1,01,067	+1,17,413	—16,346	—5

The gross Receipts show an increase of Rs. 1,01,067; and if the Surplus is, nevertheless, Rs. 16,346 less than in the previous year, this is due to the fact that Rs. 31,000 were charged off on account of the Bakani slide, and Rs. 7,748 were expended on tramway plant for Changa Manga. Forest settlement and demarcation also demanded an outlay of Rs. 20,000 in excess of that in the previous year.

Central Provinces.

111. In spite of a decreased sale of timber and fuel, the financial results of the year's transactions, as exhibited in the following table, are satisfactory :—

Years.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
1885-86	10,36,894	4,45,432	5,91,462	57
1884-85	10,27,202	4,95,821	5,31,381	52
Increase or decrease in 1885-86 ...	+9,692	—50,389	+60,081	+5

The gross Revenue has risen by Rs. 9,692, the Surplus by Rs. 60,081, and the proportion of Surplus to gross Revenue by 5 per cent.

Burma.

112. The financial results of the year, as exhibited in the following table, show an increase of upwards of 3 lakhs of rupees in the gross Revenue, and of Rs. 3,64,000 in the Surplus :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
Pegu	15,54,616	8,32,438	7,22,178	46
Tenasserim	4,69,243	3,18,514	1,50,729	32
Total in 1885-86 ...	20,23,859	11,50,952	8,72,907	43
„ 1884-85 ...	16,70,982	12,12,233	4,58,748	27
Increase or decrease in 1885-86 ...	+3,52,877	—61,281	+4,14,159	+16

The prices of teak continued low, and the increase in revenue is entirely due to the sale of a larger quantity of teak timber belonging to Government, for there was also a serious falling off in the revenue derived from timber and minor forest produce extracted by consumers and purchasers.

Assam.

113. The financial results compare as follow with those of 1884-85 :—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1885-86	1,96,656	2,11,494	14,838
1884-85	1,80,414	1,97,699	17,285
Increase or decrease in 1885-86 ...	+16,242	+13,795	—2,447

The Receipts have slightly increased, but the Charges are also higher, and the Deficit is only Rs. 2,447 less than in the previous year.

Coorg.

114. The financial results, as compared with those of the previous year, were as follows :—

Year.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
1885-86	89,386	65,690	23,696	27
1884-85	1,13,233	76,951	36,282	32
Decrease in 1885-86 ...	—23,847	—11,261	—12,586	—5

The Receipts have decreased by Rs. 23,847, owing chiefly to the fact that less timber and sandalwood were brought to depôt, and that of an inferior quality, and partly to less income derived from cardamoms, as already noticed. Till the arrangements for timber extraction have been permanently improved, the income from the Coorg forests must evidently remain fluctuating.

The expenditure of the year was also considerably reduced, but partly at the cost of important works, and the Surplus is still less than that of the previous year by Rs. 12,586.

Ajmere.

115. The financial results of the year under review were, compared with those of the previous year, as follows :—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1885-86	9,697	16,469	6,772
1884-85	10,456	16,316	5,860
Increase or decrease in 1885-86 ...	—759	+153	+912

There was a deficit of Rs. 6,772; but the value of forest produce supplied to villagers amounted, at a low estimate, to upwards of Rs. 60,000, and a considerable income from the forest growth cannot be expected for years.

Baluchistan.

116. A satisfactory result of the year's administration is the large decrease that has taken place in the deficit. The financial results for the last three years compare as follow:—

Year.	Receipts.	Charges.	Deficit.
	Rs.	Rs.	Rs.
1883-84	4,752	16,911	12,159
1884-85	6,089	13,266	7,177
1885-86	14,962	15,799	837

Andamans.

117. The financial results of the year are given as follows:—

	Cash.	Invoice.	Total.
	Rs.	Rs.	Rs.
Receipts	16,696	49,907	66,603
Charges	16,916	17,216	34,132
Surplus or Deficit in 1885-86	— 220	+ 32,691	+ 32,471
„ „ 1884-85	— 5,261	+ 26,366	+ 21,105
Difference in 1885-86	— 5,041	+ 6,325	+ 11,366

The timber supplied to local Departments has been invoiced at Rs. 49,907, and the cost of convict labour supplied for forest operations at Rs. 17,216; but, since the provisions of paragraph 161 of the Forest Department Code, referring to inter-departmental transfers, have not been followed in either case, the book entries cannot be recognised in the Financial Department.

Berar.

118. The financial results of the year's working were as follow :—

Class of Forests.	Receipts.	Charges.	Surplus.	Deficit.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Rs.	Per cent.
State Reserves	54,331	62,470	...	8,139	...
District „	1,72,409	45,256	1,27,153	...	...
Unclassed Forests ...	93,111	51,516	41,595	...	...
Total in 1885-86	3,19,851	1,59,242	1,60,609	...	50
„ 1884-85 ...	2,97,185	1,52,649	1,44,536	...	49
Increase in 1885-86 ...	22,666	6,593	16,073	...	1

The Reserves have yielded the main portion of the year's revenue, the net Surplus placed to their credit amounting to nearly Rs. 1,20,000. The serious falling off in the revenue realized from the Unclassed Forests has not been explained.

Madras.

119. The general financial results of the year are shown in the subjoined statement :—

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
Northern	5,46,282	4,01,817	1,44,465	26
Southern ...	6,52,368	5,36,155	1,16,213	18
Total { 1885-86 ...	11,98,650	9,37,972	2,60,678	22
{ 1884-85 ...	11,66,916	8,96,505	2,70,411	23
Increase or decrease in 1885-86 ...	+31,734	+41,467	—9,733	—1

Bombay.

120. The financial results were as follows —

Circle.	Receipts.	Charges.	Surplus.	Proportion of Surplus to gross Revenue.
	Rs.	Rs.	Rs.	Per cent.
Northern	10,37,297	6,63,640	3,73,657	36
Southern	17,92,115	7,73,161	10,18,954	57
Sind	5,36,874	4,02,660	1,34,214	25
Total in 1885-86 ...	33,66,286	18,39,461	15,26,825	45
„ 1884-85 ...	27,74,842	17,78,723	9,96,119	36
Increase in 1885-86 ...	5,91,444	60,738	5,30,706	9

This is the largest revenue that has ever been realized by the Bombay Forest Department, and the proportion of Surplus to Receipts has risen from 36 to 45 or by 9 per cent. This is eminently satisfactory ; but, as the large increase is to some extent due to temporary causes, a permanency of this year's high income and net profits cannot be hoped for, at least for the present.

CHAPTER VI.

Exports of Forest Produce.

121. The following table shows the quantities of Forest Produce exported from India during the year:—

Articles.	Quantity in tons of 20 cwt.: in the case of Teak, 50 cubic feet.		Valuation at port of shipment in 1885-86.	
	Average of 5 years, 1880-81 to 1884-85.	In 1885-86.	Total.	Per ton.
			Rs.	Rs.
Caoutchouc	483	328	6,56,204	2,001
Shell-lac	4,502	5,606	43,96,417	784
Lac-dye	164	89	31,630	355
Cardamoms	96	134	5,60,012	4,179
Sandalwood, Ebony, and other ornamental Woods ...	...	(Not known.)	4,47,256	(Not known.)
Cutch and Gambier ...	13,146	10,268	25,28,394	246
Myrabolams	21,798	35,297	29,93,647	85
Teak	55,043	50,076	55,05,155	110
Total in 1885-86	...	...	1,71,18,715	...
,, 1884-85	...	...	1,67,70,855	...
Increase in 1885-86	...	...	3,47,860	...

APPEN

STATE

Summary of the Revenue and Expenditure of the Forest

Budget Heads.	Bengal Presidency (British Territories).									
	Imperial.	Bengal.	North-Western Provinces and Oudh.	Punjab.	Central Provinces.	Burma.	Assam.	Coorg.	Ajmere.	Baluchistan.
REVENUE.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
I.—Timber and other produce removed from the forests by Government agency.	...	72,754	8,14,389	4,55,745	1,33,925	16,53,780	596	61,936	3,009	2,918
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	4,92,149	6,03,651	3,41,774	8,69,331	1,94,976	1,79,227	24,381	5,923	11,303
III.—Drift and waif wood and confiscated forest produce.	...	3,486	16,580	29,575	3,676	1,15,431	1,317	48	...	...
IV.—Revenue from forests not managed by Government.	...	226	9,517	3,495	10,360	25,106	10,271	...	...	429
V.—Miscellaneous ...	...	28,817	17,358	19,830	19,601	34,566	5,246	3,021	766	312
Total Revenue ...	14,708	5,97,432	14,61,495	8,50,419	10,36,893 +1= 10,36,894	20,23,859	1,96,657 −1= 1,96,656	89,386	9,698 −1= 9,697	14,962
EXPENDITURE.										
A.—Conservancy and Works.										
I.—Timber and other produce removed from the forests by Government agency.	...	46,155	4,35,898	2,28,406	30,239	6,84,252	1,538	17,711	1,200	2,233
II.—Timber and other produce removed from the forests by consumers or purchasers.	...	31,421	43,851	1,723	1,75,430	7,495	6,596	...	77	293
III.—Drift and waif wood and confiscated forest produce.	...	654	4,832	8,297	...	69,055	63	...	...	...
IV.—Revenue from forests not managed by Government.	...	...	1,648	...	...	7,472	...	...	...	...
V.—Rent of leased forests, and payments to shareholders in forests managed by Government.	...	...	15,453	40,487	4,251	...	...	...	...	...
VI.—Live-stock, stores, tools and plant.	...	10,597	19,858	12,320	7,027	23,878	11,297	889	76	90
VII.—Communications and buildings.	...	22,725	80,249	7,678	4,174	13,699	28,350	1,901	333	76
VIII.—Demarcation, improvement, and extension of forests.	...	36,176	67,437	64,870	34,142	59,899	39,502	12,990	2,468	2,052
IX.—Miscellaneous ...	...	3,304	8,615	3,783	4,141	9,252	5,139	452	56	10
Total Conservancy and Works	...	1,51,032	6,77,841	3,67,564	2,59,404	8,75,002	92,485	33,943	4,210	4,754
B.—Establishments.										
I.—Salaries ...	...	1,78,666	2,47,975	2,49,362	1,57,790	2,34,707	95,879	25,211	10,202	8,693
II.—Travelling allowances...	...	30,895	32,758	40,644	14,783	33,649	18,178	5,563	1,472	2,137
III.—Contingencies ...	...	9,806	15,945	17,913	13,455	7,594	4,952	973	585	214
Total Establishments ...	...	2,19,367	2,96,678	3,07,919	1,86,028	2,75,950	1,19,009	31,747	12,259	11,044
Grand Total of Expenditure.	88,245	3,70,399	9,74,519	6,75,483	4,45,432	11,50,952	2,11,494	65,690	16,469	15,798 +1= 15,799
SURPLUS ...	...	2,27,033	4,86,976	1,74,936	5,91,462	8,72,907	...	23,696	...	...
DEFICIT ...	73,537	...	...	...	...	...	14,838	...	6,772	837

DICES.

MENT I.

Department in India for the year 1885-86.

Andamans.	Forest School.	Forest Surveys (Imperial).	Total Bengal Presidency (British Territories).	Madras.	Bombay.	Total British Provinces.	Berar.	Forest Surveys (Berar).	Grand Total.	Budget Heads.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	REVENUE.
...	...	...	31,99,052	3,51,415	21,42,296	56,92,763	...	...	56,92,763	I.—Timber and other produce removed from the forests by Government agency.
...	...	...	27,22,715	8,07,805	11,06,648	46,37,168	3,14,143	...	49,51,311	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	1,70,113	15,180	10,566	1,95,859	1,642	...	1,97,501	III.—Drift and waif wood and confiscated forest produce.
...	...	...	59,404	...	47,396	1,06,800	...	...	1,06,800	IV.—Revenue from forests not managed by Government.
...	273	202	1,29,992	24,200	59,378	2,13,570	4,262	631	2,18,463	V.—Miscellaneous.
23,944	273	202	63,19,927	11,98,600 +50= 11,98,650	33,66,284 +2 = 33,66,286	1,08,84,863	3,20,047 −196= 3,19,851	631	1,12,05,345	Total Revenue.
										EXPENDITURE.
										A.—Conservancy and Works.
...	...	...	14,47,632	1,29,569	7,80,838	23,58,039	...	...	23,58,039	I.—Timber and other produce removed from the forests by Government agency.
...	...	...	2,66,886	64,338	29,504	3,60,728	12,794	...	3,73,522	II.—Timber and other produce removed from the forests by consumers or purchasers.
...	...	...	82,901	2,118	424	85,443	...	...	85,443	III.—Drift and waif wood and confiscated forest produce.
...	...	...	9,120	241	4,935	14,296	...	...	14,296	IV.—Revenue from forests not managed by Government.
...	...	...	60,191	14,896	43,785	1,18,872	17,120	...	1,35,992	V.—Rent of leased forests, and payments to shareholders in forests managed by Government.
...	2,324	1,100	89,456	26,889	8,238	1,24,583	6,797	2,632	1,34,012	VI.—Live-stock, stores, tools and plant.
...	...	...	1,59,185	32,759	8,323	2,00,267	12,628	597	2,13,492	VII.—Communications and buildings.
...	...	3,085	3,22,621	1,40,494	1,01,714	5,64,829	7,739	6,463	5,79,031	VIII.—Demarcation, improvement, and extension of forests.
...	2,615	340	37,713	11,632	5,292	54,637	6,108	...	60,745	IX.—Miscellaneous.
...	4,939	4,531	24,75,705	4,22,936	9,83,053	38,81,694	63,186	9,692	39,54,572	Total Conservancy and Works.
										B.—Establishments.
...	16,248	11,265	12,35,998	3,97,739	6,58,121	22,91,858	79,088	24,251	23,95,197	I.—Salaries:
...	1,379	2,515	1,83,973	91,674	1,07,234	3,82,881	11,838	7,160	4,01,879	II.—Travelling allowances.
...	1,673	869	73,979	24,082	40,476	1,38,537	4,923	1,837	1,45,297	III.—Contingencies.
...	19,300	14,649	14,93,950	5,13,495	8,05,831	28,13,276	95,849	33,248	29,42,373	Total Establishments.
37,035	24,239	19,180	40,94,936	9,36,431 +1,541 = 9,37,972	17,88,884 +50,577= 18,39,461	68,72,369	1,59,035 +207= 1,59,242	42,940	70,74,551	Grand Total of Expenditure.
...	...	...	22,24,991	2,60,678	15,26,825	40,12,494	1,60,609	...	41,30,794	SURPLUS.
13,091	23,966	18,978	...	...	...	...	...	42,309	...	DEFICIT.

STATEMENT II.*

Financial Results of Forest Administration for the year 1885-86.

Province.	Timber and other produce removed from the Forests by Government Agency.			Other Revenue.			Formation, protection, and Improvement of Forests.
	Receipts.	Charges.	Surplus or Deficit.	Receipts.	Charges.	Surplus or Deficit.	Charges.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	74,308	67,286	7,022	5,23,124	1,30,161	3,92,963	1,72,952
N.-W. Provinces and Oudh ...	8,14,559	4,95,513	3,19,046	6,46,936	2,05,992	4,40,944	2,73,014
Punjab	4,85,320	3,85,991	99,329	3,65,099	1,11,225	2,53,874	1,78,267
Central Provinces	1,35,371	38,045	97,326	9,01,522	2,61,749	6,39,773	1,45,639
Burma	16,76,439	8,58,223	8,18,216	2,97,420	1,45,327	1,52,093	1,47,403
Assam	1,912	1,602	310	1,94,745	74,062	1,20,683	1,35,830
Coorg	61,936	29,599	32,337	27,450	5,981	21,469	30,110
Ajmere	3,009	1,200	1,809	6,688	4,981	1,707	10,288
Baluchistan	2,918	2,852	66	12,044	5,829	6,215	7,117
Andamans	60,258	13,907	46,351	3,765	240	3,525	800
Total ...	33,16,030	18,94,218	14,21,812	29,78,793	9,45,547	20,33,246	11,01,420
Berar	...	...	...	3,20,047	1,13,006	2,07,041	46,029
Total Bengal Presidency ...	33,16,030	18,94,218	14,21,812	32,98,840	10,58,553	22,40,287	11,47,449
Madras	3,52,426	2,96,414	56,012	8,46,174	3,51,024	4,95,150	2,88,993
Bombay	17,30,785	9,87,132	7,43,653	10,43,994	1,91,705	8,52,289	5,38,071
Grant Total ...	53,99,241	31,77,764	22,21,477	51,89,008	16,01,282	35,87,726	19,74,513

* The figures in this Statement are taken from Form No. 62 appended to the Annual Forest Reports.

STATEMENT III.*

Revenue, Expenditure, and Surplus of the Forest Department throughout India during the 22 years from 1864-65 to 1885-86.

REVENUE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial†	421	30,959	752	543	1,159	1,436	3,107	2,334	2,771	1,225	1,144	1,465	2,490	1,36,772	16,716	17,214	18,887	27,407	30,732	32,907	26,574	14,708
Bengal	19,760	38,658	45,590	56,039	70,715	2,44,657	1,03,249	1,44,719	1,49,852	1,79,336	1,85,932	1,98,274	2,22,491	4,26,228	4,16,027	4,49,524	5,61,340	6,33,734	6,93,959	6,94,334	5,71,152	5,97,432
North-Western Provinces and Oudh ...	7,23,440	7,31,382	7,79,201	5,84,503	7,85,210	8,32,945	4,24,257	11,70,900	19,39,115	19,32,677	13,63,358	12,64,356	11,50,671	12,03,108	11,26,755	10,39,966	9,42,228	10,66,094	10,13,403	16,11,383	15,72,319	14,61,495
Punjab	5,27,081	3,50,680	3,96,050	2,80,510	3,44,882	3,94,129	9,47,236	7,10,216	6,52,995	7,32,539	8,34,874	9,09,831	5,98,754	6,83,711	5,00,619	6,49,819	6,71,678	6,88,308	7,66,709	9,10,177	7,40,352	8,50,419
Central Provinces...	68,760	1,34,042	2,37,472	3,49,490	3,50,536	4,16,020	6,58,120	5,57,128	4,81,673	5,08,367	6,60,938	7,26,176	6,61,326	6,83,910	8,52,862	10,06,724	8,50,139	11,72,884	9,77,647	9,94,769	10,27,202	10,36,894
Burma	9,34,070	8,98,485	4,24,774	6,46,812	8,17,599	9,94,774	8,18,124	7,72,400	8,27,569	10,68,621	10,74,802	17,79,020	15,51,408	16,03,082	11,37,562	11,80,190	15,16,613	22,31,804	25,03,896	25,09,275	16,70,982	20,23,859
Assam	...	...	...	...	...	...	...	...	...	...	65,949	61,870	81,568	1,34,326	1,61,779	1,64,335	1,68,907	1,66,054	2,48,605	2,11,445	1,80,414	1,96,656
Coorg	57,488	1,01,157	32,508	79,082	98,496	1,08,135	72,144	92,466	84,425	1,10,284	58,015	1,97,460	75,927	1,01,015	52,020	1,01,786	87,857	1,00,364	1,38,022	87,822	1,13,233	99,386
Ajmere	...	...	...	...	...	...	...	...	24	304	202	410	905	3,002	1,241	1,861	1,124	4,065	7,126	8,198	10,456	9,697
Forest Surveys (Imperial)	...	...	...	...	...	...	...	...	...	...	...	21	...	...	63	38	272	...	348	36	234	202
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	73	273
Andamans	2,808	2,515	3,495	6,070	5,071	3,036	7,373	5,880	6,862	4,184	5,516	5,363	4,679	1,301	5,564	2,437	27,734	48,407	70,858	24,762	22,213	23,944
Total ...	23,33,828	22,97,878	19,19,842	20,03,049	24,73,668	29,85,132	30,33,610	34,56,043	41,45,286	45,97,567	42,50,730	50,54,246	43,50,129	49,76,455	42,71,208	46,13,894	48,46,869	61,39,121	64,51,305	70,85,108	59,44,204	63,04,965
Madras	4,49,770	4,76,674	4,48,110	5,81,342	5,29,185	6,97,699	5,33,412	5,78,261	5,95,188	6,13,653	5,14,401	6,77,873	5,92,573	5,50,310	6,06,788	6,26,168	7,36,880	8,06,908	9,06,442	9,53,704	11,66,916	11,98,650
Bombay	10,81,907	10,07,611	8,21,268	8,84,244	12,13,483	12,35,257	11,68,401	11,50,215	11,46,405	11,88,089	12,24,051	12,48,672	12,26,658	12,61,528	11,81,894	15,24,712	15,22,807	18,28,117	20,90,353	25,03,100	27,74,842	33,66,286
Total (British India) ...	38,65,505	37,72,163	31,89,220	34,68,635	42,16,336	49,18,088	47,35,423	51,82,519	58,86,879	63,99,309	59,89,182	69,80,791	61,69,360	67,88,293	60,59,890	67,64,774	71,06,556	87,74,146	94,48,100	1,05,41,912	98,85,962	1,08,69,901
Berar	2,369	15,106	43,574	53,440	84,557	1,80,397	1,77,329	1,55,543	2,56,563	2,63,256	2,60,674	2,32,782	2,53,072	2,79,236	2,88,704	3,07,500	2,66,556	2,33,511	2,92,014	3,08,218	2,97,185	3,19,851
Forest Surveys (Berar)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	934	631
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14,376	18,616	5,039	4,752	6,089	14,962
Grand Total ...	38,67,873	37,87,269	32,32,794	35,22,075	43,00,893	50,98,485	49,12,752	53,38,062	61,43,442	66,62,565	62,49,856	72,13,573	64,22,432	70,67,529	63,48,594	70,72,274	73,87,488	90,26,273	97,45,153	1,08,54,882	1,01,90,170	1,12,05,345

* The figures in this statement have been revised by the Comptroller and Auditor General.
† Includes certain Home Receipts, and undistributable and petty local items.

STATEMENT III—*continued.*

EXPENDITURE.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	44,207	16,981	32,078	38,924	33,007	54,106	51,423	66,530	67,150	79,216	81,210	48,239	44,004	98,099	63,956	73,810	65,291	77,635	87,268	98,266	96,306	88,245
Bengal	3,971	45,292	1.05,215	1,67,495	1,15,933	1,17,899	86,479	1,10,989	1,00,777	1,39,274	1,01,361	1,42,676	2,14,497	2,62,913	3,38,675	2,75,748	3,35,381	3,94,612	3,82,183	3,87,813	4,11,915	3,70,399
North-Western Provinces and Oudh ...	5,03,580	3,31,261	4,10,205	3,89,806	5,01,021	5,29,422	8,10,073	11,10,071	11,74,666	11,90,794	10,61,302	7,36,979	8,61,362	7,28,926	8,09,977	7,16,594	6,79,574	9,16,212	8,39.025	10,41,885	10,20,101	9,74,519
Punjab	5,78,616	2,71,369	2,63,373	2,88,029	3,17,634	7,41,432	11,95,655	7,07,619	8,90,369	6,11,556	6,59,983	5,56,911	5,25,659	5,20,631	5,23,554	4,80,676	4,95,368	5,16,269	5,60,750	6,53,146	5,58,070	6,75,483
Central Provinces...	1,55,270	1,08,597	1,49,408	2,18,434	3,19,126	4,74,930	3,17,928	2,31,633	2,50,578	2,85,939	2,94,449	3,73,327	2,90,295	3,22,034	3,93,758	5,22,574	4,95,512	4,97,013	4,12,247	4,36,058	4,95,821	4,45,432
Burma	2,62,930	3,11,941	2,86,993	3,30,526	4,24,333	4,22,106	4,00,851	3,79,217	3,36,759	4,75,304	6,63,547	8,15,659	10,05,554	8,58,231	7,18,402	7,53,490	7,12,563	11,50,224	12,28,955	12,17,824	12,12,233	11,50,952
Assam	...	...	...	...	...	...	...	...	...	...	60,367	63,397	90,520	1,01,153	1,26,028	1,32,829	1,42,725	1,65,361	1,71,823	1,99,562	1,97,699	2,11,494
Coorg	3,407	12,996	8,650	13,722	17,848	33,064	24,747	70,178	29,478	45,952	37,999	40,168	33,692	36,268	34,829	55,165	56,487	59,796	64,770	75,023	76,951	65,690
Ajmere	...	...	...	...	...	...	...	...	13,054	17,932	15,281	27,346	22,460	14,926	13,445	13,750	12,423	13,954	11,284	14,574	16,316	16,469
Forest Surveys (Imperial)	...	...	...	...	...	...	...	...	...	59,556	78,090	58,930	58,929	60,165	60,325	46,878	40,335	42,489	41,595	30,940	19,823	19,180
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	22,568	24,239
Andamans	...	...	...	...	..	150	...	1,651	1,896	...	...	...	1,307	1,096	...	7,177	2,160	2,306	1,840	12,161	22,760	37,035
Total ...	15,51,981	10,98,437	12,55,922	14,46,936	17,28,902	23,73,109	28,87,156	26,79,888	28,64,728	29,05,523	30,52,589	28,63,632	31,48,279	30,04,442	30,82,949	30,72,691	30,37,824	38,35,871	38,01,740	41,67,252	41,50,563	40,79,137
Madras	2,64,780	3,51,392	3,42,827	4,02,674	4,01,617	4,21,316	4,47,267	3,91,921	5,48,746	4,74,920	5,95,941	5,92,039	6,35,360	5,65,624	4,95,914	5,48,527	5,19,270	6,03,419	6,45,352	7,86,733	8,96,505	9,37,972
Bombay	3,72,187	7,77,139	6,51,641	5,55,039	6,31,226	5,56,015	6,39,759	5,97,831	7,25,031	7,21,594	8,36,675	7,94,141	8,38,979	8,77,716	10,04,923	10,76,989	11,67,347	11,69,181	12,78,770	15,64,172	17,78,723	18,39,461
Total (British India) ...	21,88,948	22,26,968	22,50,390	24,04,649	27,61,745	33,50,440	39,74,182	36,67,640	41,38,505	41,02,037	44,85,205	42,49,812	46,22,818	44,47,782	45,83,786	46,98,207	47,24,441	56,08,471	57,25,862	65,18,157	68,25,791	68,56,570
Berar	478	8,991	13,718	18,669	34,105	81,569	81,972	1,00,829	83,631	86,350	91,389	91,449	94,652	1,09,968	1,07,350	1,10,506	1,28,968	1,52,985	1,55,054	1,56,779	1,52,649	1,59,242
Forest Surveys (Berar)	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15,043	34,804	42,940
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16,416	17,682	11,962	16,911	13,266	15,799
Grand Total ...	21,89,426	22,35,959	22,64,108	24,23,318	27,95,850	34,32,009	40,56,154	37,68,469	42,22,136	41,88,387	45,76,594	43,41,311	47,17,470	45,57,750	46,91,136	48,08,713	48,69,825	57,79,138	58,92,878	67,06,890	70,26,510	70,74,551

* Includes pay of Inspector-General of Forests, certain Home Charges, and undistributable and petty local items.

STATEMENT III—*concluded.*

SURPLUS.

Provinces.	1864-65.	1865-66.	1866-67.	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.	1877-78.	1878-79.	1879-80.	1880-81.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Imperial*	—43,786	13,978	—31,326	—38,381	—31,848	—52,670	—48,316	—64,196	—64,379	—77,991	—80,066	—46,774	—41,514	38,673	—47,240	—56,596	—46,404	—50,228	—56,536	—65,359	—69,732	—73,537
Bengal	15,789	—6,634	—59,625	—1,11,456	—45,218	1,26,758	16,770	33,730	49,075	40,992	84,571	55,598	7,904	1,63,315	77,352	1,73,776	2,25,959	2,39,122	3,11,776	3,06,521	1,59,237	2,27,033
N.-W. Provinces and Oudh ...	2,19,860	4,00,121	3,68,996	1,94,697	2,84,189	3,03,523	—3,85,816	60,829	7,64,449	7,41,883	3,02,056	5,27,377	2,80,309	4,74,182	3,16,778	3,23,372	2,62,654	1,49,882	1,74,373	5,69,498	5,52,218	4,86,976
Punjab	—51,535	79,311	1,32,677	—7,589	27,248	—3,47,303	—2,48,419	2,597	—2,37,374	1,20,983	1,75,891	3,52,920	73,095	1,63,080	—22,935	1,69,143	1,76,310	1,72,039	2,05,959	2,57,031	1,91,282	1,74,936
Central Provinces ...	—86,510	25,445	88,064	1,31,056	31,410	—58,910	3,40,192	3,25,495	2,31,095	2,82,428	3,66,489	3,52,849	3,71,031	3,61,876	4,59,104	4,84,150	3,54,027	6,75,871	5,65,400	5,58,711	5,31,381	5,91,462
Burma	6,71,140	5,86,544	1,37,781	3,16,286	3,93,266	5,62,668	4,17,273	3,93,183	4,90,810	5,93,317	4,11,255	9,63,361	5,45,854	7,44,851	4,19,160	4,26,700	8,04,045	10,81,580	12,74,941	12,91,451	4,58,749	8,72,907
Assam	...	...	...	...	...	...	...	...	...	...	5,582	—1,527	—8,952	33,173	35,751	31,506	26,272	693	76,782	11,883	—17,285	—14,838
Coorg	54,081	88,161	23,858	95,360	80,648	75,071	47,397	22,288	54,946	64,332	20,016	67,292	42,235	64,747	17,191	46,621	31,370	40,568	73,252	12,799	36,282	23,696
Ajmere	...	...	...	...	...	...	...	...	—13,030	—17,628	—15,079	—26,936	—21,555	—11,924	—12,204	—11,889	—11,299	—9,889	—4,158	—6,376	—5,860	—6,772
Forest Surveys (Imperial) ...	...	...	...	...	...	...	...	...	...	—59,556	—78,090	—58,909	—58,929	—60,165	—60,262	—46,840	—40,063	—42,489	—41,247	—30,904	—19,589	—18,978
Forest School	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—22,495	—23,966
Andamans	2,808	2,515	3,495	6,070	5,071	2,886	7,373	4,229	4,066	4,184	5,516	5,363	3,372	205	5,564	—4,740	25,574	46,101	69,018	12,601	—547	—13,091
Total ...	7,81,847	11,89,441	6,63,920	5,56,113	7,44,766	6,12,023	1,46,454	7,78,155	12,80,558	16,92,044	11,98,141	21,90,614	12,01,850	19,72,013	11,88,259	15,35,203	18,09,045	23,03,250	26,49,565	29,17,856	17,93,641	22,25,838
Madras	1,84,990	1,25,282	1,05,283	1,78,668	1,27,568	2,76,383	86,115	1,84,340	46,442	1,38,733	—81,540	85,834	—42,987	—15,314	1,10,874	77,641	2,17,610	2,03,489	2,61,090	1,66,971	2,70,411	2,60,678
Bombay	7,09,720	2,30,472	1,69,627	3,29,205	5,82,257	6,79,242	5,28,642	5,52,384	4,21,374	4,66,495	3,87,376	4,54,531	3,87,679	3,63,812	1,76,971	4,47,723	3,55,460	6,58,936	8,11,583	9,38,928	9,96,119	15,26,825
Total (British India) ...	16,76,557	15,45,195	9,38,830	10,63,986	14,54,591	15,67,648	7,61,241	15,14,879	17,48,374	22,97,272	15,03,977	27,30,979	15,46,542	23,40,511	14,76,104	20,60,567	23,82,115	31,65,675	37,22,238	40,23,755	30,60,171	40,13,331
Berar	1,890	6,115	29,856	34,771	50,452	98,828	95,357	54,714	1,72,932	1,76,906	1,69,285	1,41,283	1,58,420	1,69,268	1,81,354	1,96,994	1,37,588	80,526	1,36,960	1,51,439	1,44,536	1,60,609
Forest Surveys (Berar) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—15,043	—33,870	—42,309
Baluchistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—2,040	934	—6,923	—12,159	—7,177	—837
Grand Total ...	6,78,447	15,51,310	9,68,686	10,98,757	15,05,043	16,66,476	8,56,598	15,69,593	19,21,306	24,74,178	16,73,262	28,72,262	17,04,962	25,09,779	16,57,458	22,57,561	25,17,663	32,47,135	38,52,275	41,47,992	31,03,660	41,30,794

* Includes pay of Inspector-General of Forests, certain Home Charges, and undistributable and petty local items.

G. C. Press, Simla—No. 330 R. & A. D.—7-11-87.—500.

00134400

Digitized with financial assistance from

Government of Maharashtra

on 01 February, 2020